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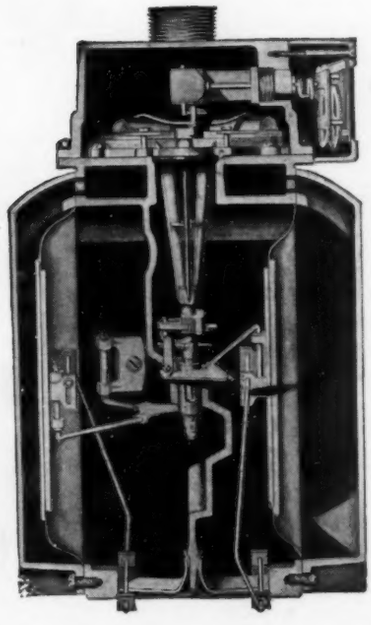

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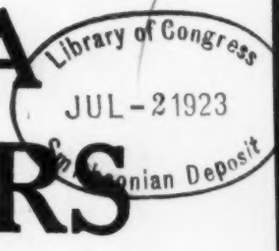

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The Fuel of the Future—What Shall It Be?

I. FUELS AND THEIR CLASSIFICATION—How Fuels Are Classified—Sources of Supply and Distribution in the United States—What Makes a Universal Fuel

Ismar Ginsberg, B. Sc., Chem. Eng.

The first of a series of articles on the fuel question. The fuels are classified and coals are subdivided into various classes. Properties of each class are given. The distribution of coals and particularly gas coal in the United States is described in detail. The properties of a universal fuel are discussed and the manner in which the fuels fill certain of the qualifications is explained.

There is no one commodity, not excepting food, which is used in such large amounts and in so universal a fashion as fuel. There is more fuel consumed than any other single commodity. Every manufactured article, everything we wear, and many of the things that we eat, the buildings in which we live, the furniture in our homes, in our offices, the apparatus in the factories, in fact, everything that we see around us represents in some way a consumption of fuel, either in its manufacture, direct or indirect, or at least in the act of transporting it from the place it originated to where it is now. It is consequently no untruth to call the fuel question the most important that any of us have to face today. We are all concerned with it, and as gas men our interest is far greater than that of the laymen. For we are engaged in manufacturing a fuel, which will or will not, as we indeed wish it ourselves, constitute an important factor in solving the fuel problem and in fact develop into the perfect, universal fuel of the future.

Classification of Fuels

It is not strange to find that the fuels comprise all the known states of matter. There are liquid fuels, gaseous fuels and solid fuels. Euch and every class of fuel and each and every fuel itself possesses different characteristics which distinguish it from the others and which make one fuel better than another for a definite purpose. But it must be remembered that no matter what the fuel is, no matter what its original state may be, before its heat value can be converted into sensible heat or work, it must first be reduced to the state of a gas. The coal that is burned in the furnace is first gasified by the heat developed therein and the combustion of the gaseous products yields heat. The oil that burns in the old-fashioned lamp and produces light is first changed in gaseous, high molecular weight hydrocarbons, containing considerable carbon, which are then decomposed with liberation of this carbon and production of light by its heating to incandescence. Gas, being already in the gaseous condition, possesses accordingly a distinct advantage over all the other fuels in this respect alone. The efficiency of gas manufacture in the gas plant is far superior to that of the evolution of gas from solid or liquid fuels in furnaces, stoves and heating apparatus of all sorts. The gas man should be aware of this fact and he should and can make use of it in selling his product. It gives him a start over his competitor, who is selling other fuels, which, if it alone cannot succeed in winning the industrial battle, surely should be able to result in success for gas, when coupled with other advantages, circumstances and conditions, which will be discussed in more detail later.

The Solid Fuels

There are several kinds of solid fuels. First, there is wood, which need not be discussed at all, as it is scarcely an industrial fuel, except in a very few special cases. Then there are the coals. The coals are of many kinds, varying from the hardest and oldest form of coal, anthracite, to the youngest member of the family, peat, which is hardly a coal at all. Coal is the result of the decomposition of vegetable matter under pressure and in the presence of moisture during the early stages of the earth's genesis. According to the degree of pressure to which it has been subjected, the duration of the decomposition and other geological conditions, the proportions of ash, volatile matter and moisture, contained in it vary. These are the factors that differentiate soft and hard coal, the various classes of soft coals, and characterize special coals, as the one used for gas making, the so-called gas coal or coking coal.

In classifying coals it must be remembered that it is not possible to make the division between the different classes an absolutely sharp one. There is apt to be some overlapping of one class over another. The United States Geological Survey makes use of the difference in the behavior of coal to weathering to distinguish between the two classes, sub-bituminous and bituminous. This difference is merely in the amount of moisture contained in the coal, which is, of course, a variable factor. However, the sub-bituminous coals as a general rule

contain more moisture than the bituminous. By using partly chemical and partly physical criteria, the United States Geological Survey* has classified

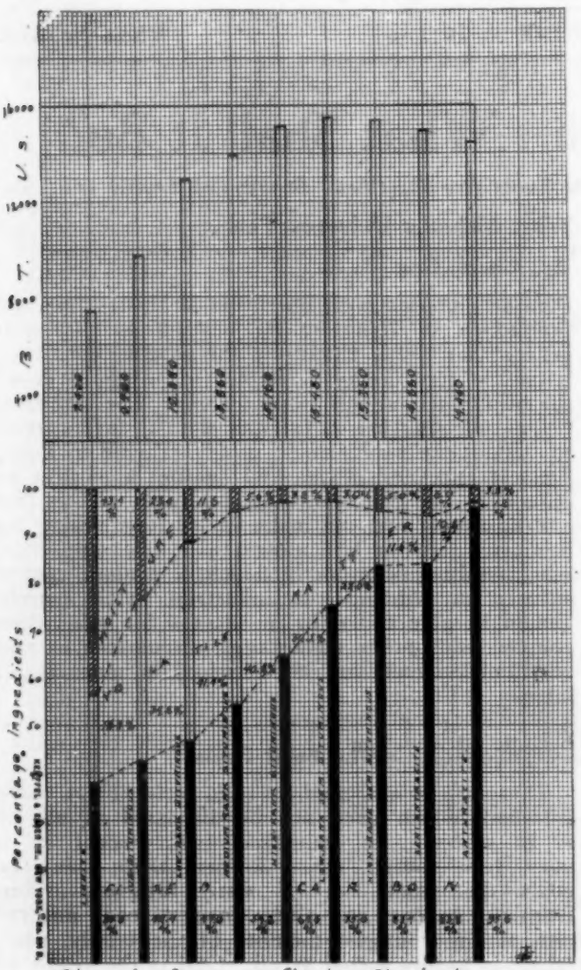


Figure 1 Diagram Showing Chemical Composition of Coals and Heat Efficiency

the coals of the country into the following six classes: Anthracite, semi-anthracite, semi-bituminous, bituminous, sub-bituminous and lignite.

Anthracite Coal

This is probably the best known coal, as it is used to a large extent by householders in cities and towns for heating their homes. It is a hard coal in which the ratio between the fixed carbon and the volatile matter is not more than 50 or 60 and not less than ten. The fixed carbon is what remains in the coal after the volatile matter has been driven off by heating to a definite temperature under accurately defined conditions. Of course, the moisture must be deducted or driven off first at the proper temperature before making the fixed carbon determination. In other words, anthracite coal contains very little volatile matter, hydrocarbons that are easily distilled from coal at comparatively low temperatures. This coal on burning does not produce smoke, but it does not possess, as many people believe, the highest heating value of all coals. This can be seen from the accompanying chart.

Semi-Anthracite Coal

Semi-anthracite is also a hard coal, but it is not so hard as anthracite. The ratio of fixed carbon to volatile matter varies from 6 to 10, indicating that there is not as much fixed carbon in the semi-anthracite as in the true anthracite. It is sometimes a very hard matter to distinguish the two coals, for the line of demarcation is not very sharp. In the course of the formation of coal, the processes that produced anthracite simply did not go far enough in the case of semi-anthracite to give a true hard coal. There is very little semi-anthracite coal in this country, and what there is mined is generally sold as anthracite under false colors.

Semi-Bituminous Coal

Semi-bituminous coal is not a bituminous coal at all, but in reality a super-bituminous coal. The fuel ratio, percentage fixed carbon to volatile matter, varies between 3 and 7. Hence it is quite a high-fixed carbon coal and is practically smokeless when burned properly. By examining the chart, it will be seen that these are the coals that possess the highest heating value, and hence they are used extensively in the production of steam and in those manufacturing processes that require a high degree of heat. It is the best coal for ships and for naval purposes. Its structure is very friable, with the result that it generally comes in rather small pieces.

Bituminous Coal

This is the class of coals in which the gas maker is particularly interested. It embraces those coals that have a fuel ratio of about 3 at a maximum. In some of these coals the proportions of fixed carbon and volatile matter are about equal. The bituminous coals are comparatively numerous and embrace coals which are used for entirely different purposes and which possess quite variant properties. Many of the higher grade coals of this group will coke and are used for coking purposes, but this does not mean that all of the coke manufactured in the country is made from this kind of coal. Very high-grade coal is made from semi-bituminous coal as well. There is no very clear connection between the chemical composition of a coal and its coking power, and hence the only sure test to determine whether or not a coal is coking, is to make a furnace test with it.

The gas coals belong to this class. Gas coals contain a high amount of volatile matter, so as to produce as much gas as possible. The coal must contain as little sulphur as possible, for sulphur is an impurity which must subsequently be removed from the coal gas, in which it exists as sulphuretted hydrogen. The development of the water gas process has done a great deal to lessen the demand for gas coal, as in the water gas process various grades of coal can be used. The gas industry demands gas coal for its manufacturing process, mainly because it is accustomed to its use. The apparatus is adjusted for operating with that kind of coal, and, to be sure, there may be important economic reasons why this coal must be used under the conditions.

*The Coal Fields of the United States. U. S. Geological Survey Professional Paper No. 100A.

But there are many other types of bituminous coal that can be used in the manufacture of gas just as efficiently and probably just as economically as gas coal. The importance of not being dependent on gas coal for gas making will be evident from the discussion of the relative plentifulness of this coal in comparison with other bituminous coals, and also of its distribution throughout the country. We shall have more to say about this later.

Sub-Bituminous Coal

The Geological Survey has adopted this name to designate what is known as black lignite. This coal is not a lignite and, in fact, it is sometimes as good as the lowest grade of bituminous coal. It does not possess the distinct woody structure of lignite coal. Sub-bituminous coal contains appreciable amounts of moisture and there are many varieties of the coal which differ markedly from one another in chemical composition and physical appearance. Some of these coals are very high in volatile matter, and they would undoubtedly be good coal for use in manufacturing gas either for illuminating purposes or as producer gas for generating power.

Lignite Coal

Lignite coals are woody in appearance and brown in color. They are intermediate in quality between peat and sub-bituminous coal. There are vast deposits of this coal in North Dakota, Texas and Arkansas. There is so much other coal available in this country at the present time at comparatively low prices that it would not pay to mine and treat lignite coal to make it into a usable fuel. But the gas man should consider that lignite is a potential cheap fuel which, when the time is ripe, will enter the field and become an active factor in the fuel problem. Gas should be the universal fuel of the future for various reasons, as will be shown, but if it does not rise to meet the opportunity that confronts it, there is no doubt that some other fuel will grasp the opportunity, and the recent investigations made by the Government on lignite coal just serve to show that other fuels also have possibilities, although in our opinion by no means so strong as those of gas, of attaining the common goal.

Coke

Coke is also a solid fuel in which we are particulary interested, as it forms today one of the most important byproducts of the gas industry. There are various grades of coke, according to the purpose for which it is used. Coke employed in the blast furnace to furnish the heat and carbon for the reduction of the iron ore must possess quite different characteristics and properties than coke which is used under the boiler or in the steam heating furnace. Coke is a very excellent fuel when properly made. It is free from dust, burns with a hot flame and without any smoke, and when the proper kind of grate and draft arrangements are used in the furnace or stove, it can be burned just as easily as coal and will give just as good if not better results than coal. The conversion of all coal into coke and the utilization of coke in the place of coal, wherever gas itself cannot be used for certain peculiar reasons, presents an ideal fuel condition, for then the valuable products that are produced from coal by dry distillation, manufactured gas, tar, ammonia, etc., can be saved instead of going up into smoke in the chimney. Coke is made both by gas companies, who are mainly interested in securing gas from the coal, and also by plants which are more concerned in making a satisfactory metallurgical coke, but who, by operating by-product ovens, collect the gas and other by-products as well. Coke is also still made in this country by the wasteful beehive process, which does not recover gas or by-products. In 1921 there were almost four times as much coke produced by by-product plants as by beehive plants, the actual figures being 5,561,000 net tons for beehive coke and 19,918,000 net tons for by-product coke. On January 1, 1922, the annual capacity of the by-product coke ovens of the country, if operated at 100 per cent full capacity, was 44,725,000 tons.

The classification of solid fuels would not be complete without some mention of the artificially prepared briquetted fuels and various waste materials, such as sawdust, waste bark, etc. However, these fuels are used for most part, with the exception of the briquetted fuels, in the plants in which they are produced, and possess no interest for us.

Liquid Fuels

The liquid fuels are few. The most important is petroleum and the products that are derived from petroleum by distillation. Coal tar oils may be used as fuel to some degree, but mainly as a binder of coal dust or other finely ground materials in the manufacture of briquetted fuels. Gas oil is a liquid fuel and is of great importance to the gas industry, for gas oil must be used by the great majority of gas companies to bring the manufactured coal or water gas up to the thermal standard, set by law. Gas oil is a product of petroleum distillation, and is the only liquid fuel that can be advantageously used for building up the thermal value of gas. Attempts have been made to substitute it by various fractions, obtained in the distillation of coal tar, but up to the present time the results have not been satisfactory and the disadvantages which arise from its use are so many and of such varied nature that it is entirely impractical from a technical standpoint. Whether or not it will be possible to use coal tar or coal tar distillates for this purpose in the future depends on the solution of the technical problems involved.

Gaseous Fuels

The last class of fuels is the gaseous class. Here again there are but few members. There are, of course, the various manufactured gas fuels, such as coal gas, water gas, oil gas, producer gas, etc., and the natural gas fuel, natural gas. Inasmuch as we are mainly concerned with manufactured gas, and more particularly with central station gas, the main discussion of this section will be left for future articles.

Distribution of Fuels

The availability and the distribution of the fuels are important factors in the determination of their capacity of universal application. Not only must the fuel be obtainable in large quantities, but these quantities must be conveniently distributed over a large area in order to render its use universal. The fuel may be natural or manufactured; it does not

matter. As long as it fulfills these requirements, and at the same time is reasonably cheap, can be efficiently used and does not offer any serious technical difficulties, which tend to limit it to certain narrow fields, it possesses the aspects of a universal fuel. For the time being we will consider merely the question of distribution and availability. There is no question that gas fills the bill when considered from this standpoint. Manufactured gas is available in large quantities anywhere, for there are but few towns of any size in this country that do not possess gas plants or are not supplied by gas plants within easy piping distance. Of course, there is a practical limit to the supply under any set of existing conditions, but gas works can be enlarged to take care of increased demand when the circumstances warrant it.

Coal and Oil Distribution

Coal at the present time is still the nearest approach to a universal fuel. And it possesses this distinction not because it is so efficient a fuel, but merely because it is available in large quantities and is distributed fairly widely throughout the country. There are few states that do not have coal, and those that possess no coal of their own are conveniently near coal fields in neighboring states. Anthracite coal is mostly found and mined in Pennsylvania. There is a little of it in the West. Rhode Island also contains deposits of anthracite. The great bulk of semi-bituminous coals are found in the Eastern coal fields; only a little in the West. Bituminous coal is found both in the Eastern and Western parts of the country, but most of it is located in the Appalachian region, which is the greatest storehouse of high-grade coal in the United States, if not in the world. Of the total estimated supply of coal in the United States within 3,000 feet of the surface, that is, 3.5 billion tons, about one-seventh is found in the Appalachian region, and of this five hundred odd million tons, about 90 per cent, is bituminous coal.

The interior province, which comprises the Great Lakes, Mississippi Valley and Texas, contains almost as much bituminous coal as the Appalachian region. Sub-bituminous coal is found in the northern Great Plains region, in the Rocky Mountain Region and in the Pacific coast province. There is no sub-bituminous coal in the East. Practically all of the lignite, about one billion tons, is located in North Dakota, Texas and Arkansas.

Gas Coal

As has been mentioned before, gas coal is a special type of bituminous coal which contains approximately 37 to 39 per cent volatile matter. The location of beds of gas coal throughout the United States was determined by the United States Geological Survey in a general survey of the coals of the country, made a few years ago. Gas coal is considered by many gas manufacturers as a sort of sine qua non of gas making, and it is surprising to see how comparatively little of this coal there is in the United States and how narrow the distribution of the same. Just how much gas coal there is available in the United States is not known, as far as could be ascertained, but at the present time it forms by far the greatest part of the coal used in the manufacture of gas. This coal is also used by coke plants, that is, plants that are primarily concerned with the manufacture of coke for metallurgical purposes. There is thus a double drain on the supply of gas coal, and due to the enormous quantities of coal mined and sold to both steel plants, coke oven works and gas plants, it is not unexpected that the general opinion is that exhaustion of this kind of coal will occur in the comparatively near future.

An examination of the coal map of the United States will show that there are relatively few gas coal fields throughout the country. Most of the coal is found in Western Pennsylvania, West Virginia, Eastern Ohio, Eastern Tennessee and Alabama. There is a little gas coal in Northwestern Georgia, Kentucky, a very small amount in Washington, the northern part of New Mexico, the southern part of Colorado and Wyoming. Hence this coal is found in only eleven states of the Union, and, for all practical purposes, the main supply comes from but five states. All the other states do not contain any coal whose characteristics are such as to be classed as gas coal.

The deficiency of supply and distribution of gas coal disqualify it as a universal fuel, and it is self-understandable that the product, gas, made from it cannot likewise be classed as a universal fuel, as long as it is made from such coal exclusively, or nearly so. Gas can be made from other grades of coking coals, supplies of which are widely distributed throughout the land and which are often very close to gas works, who import their gas coal at high freightage cost from other states. Of course, the use of certain coals for gas making is dependent on the standard calorific power of the gas that must be maintained within legal limits. Low grade coals cannot be used for the manufacture of high calorific power gas, but there are certain grades of coal, which are not of the gas coal grade, but which can be advantageously employed in making gas of comparatively high calorific power either alone or in admixture with gas coal itself. As the calorific standards of gas are lowered, and they will have to be reduced in order to endow gas with all the qualifications of a universal fuel, coals of lower grade will become available for gas manufacture. We shall have more to say about this in a future article in the series.

Oil and Natural Gas Distribution

Both oil and natural gas can never be seriously considered as universal fuels due to the fact that their supplies are relatively small and their distribution throughout the country is limited. Oil is found in a number of states both in the Eastern, Central and Western parts of the country, principally in Pennsylvania, West Virginia, Texas, Ohio, Oklahoma, Louisiana, California, Wyoming. Natural gas occurs along with oil in many cases and it is also found alone. Practically all of the states that produce oil, produce natural gas as well.

The Government not so very long ago made the statement that the supplies of oil in this country were very limited, and that their depletion will be noticeable to a marked extent, if not entirely accomplished, within a period of twenty years or so.

A great deal of exception has been taken to this statement and at the same time many experts agree with the Government. There is no question that the oil supply of the United States is limited. How much there is of it is a hard question to answer, for new fields are being discovered every year, but the new supplies thus located are not sufficient to take care of the sharply increasing consumption. Furthermore, reported unlocated sources of supply, in other words, wild-cat territory, wherein the indications of oil are very promising, must not be considered as actual oil sources until the oil is actually found. No one is sure of oil until he actually has it. In the oil industry there are too many "slips betwixt the cup and lip" to permit an estimate of oil resources to contain probable oil fields.

The gas industry is, of course, vitally interested in the oil supply and demand, for in order to bring the manufactured gas up to the legal calorific standard, gas oil must be cracked in the process. It is estimated that about 24 million barrels of this oil are used by the gas industry yearly. But here again there is competition, for the use of petroleum fractions as fuel oil has an important effect on reducing the available supply of gas oil. Fuel oil is demanded not only by the Navy and shipping interests for fuel purposes on board oil-burning ships, but it is also used as a fuel by various industries in the country. Both the price of gas oil and its supply are seriously affected thereby. Furthermore, there is the demand for gasoline. In former days, only a certain amount of gasoline could be distilled from petroleum, but since the introduction of the cracking process, more and more gasoline is being produced from petroleum at the expense of the other substances, such as lubricating oil, kerosene, fuel oil, gas oil, etc., that can be produced from the crude oil. It is easy to see that as petroleum becomes scarcer, as gasoline demand increases, due to the further development of the automobile and the internal combustion engine, the more expensive and the scarcer gas oil will become. The end is inevitable. Sooner or later gas companies will have to do without gas oil.

It follows that neither oil or natural gas can be considered as potential universal fuels. There is the manufactured fuel, electricity, to be mentioned, but at present prices and at present manufacturing efficiencies, there is no fear that electricity can attain importance as an industrial or domestic fuel. But certain isolated cases in industry and in the home have shown that the electric companies are progressive enough to make inducements to allow electricity to be used as a fuel. There is always the possibility that by the invention of power generating apparatus, the efficiency of electricity manufacture may be improved to such a degree that the product will become practical for use as a fuel. There is the possibility, we say, and that is all, but when one comes to think of the wonderful electrical development made in the electron tube, the basis of radio telephony, which can be duplicated in other fields, the possibility sometimes appears in the light of a probability.

But it remains that coal is the universal fuel at present. Gas is made from coal and the efficiency of the process is high, much higher than the actual gasification that takes place in the grate when coal is burned. Gas is a potential universal fuel for many reasons. It possesses certain of the qualifications at the very outset, and it only remains to adjust conditions so that it will acquire the others, for the goal to be reached. This must be the ultimate goal of the gas industry, gas the universal fuel, and in our subsequent articles we shall be primarily concerned with developing our theme along these lines.

Low Temperature Carbonization

CONSTRUCTION OF RETORTS AND SETTINGS—DETAILS OF OPERATION IN BRITISH GAS WORKS—PROPERTIES OF COALITE PRODUCED.

Major Johnstone Taylor

Low temperature carbonization is a process of some commercial importance in Great Britain. Certain plants are using the process on a large scale and producing coalite, a coal substitute, as a by-product. Details of the construction and operation of the retorts in an actual installation are given.

We have previously referred in a general article* to the subject of low temperature carbonization with reference to what was being done in Great Britain, and we are now able to give some details of the principal plants built in that country. The first of these is a somewhat extensive installation near Bernsley, Yorkshire, of the L. T. C. Company, which is now carrying on smokeless fuel production on a fairly large scale, large enough, in fact, to indicate that the process is well out of the experimental stage. The main plant is laid out for the carbonizing of some 36 tons of coal per day. The fuel produced is known as coalite; it burns freely in the ordinary household grate, giving out great heat without smoke. In appearance the fuel is similar to semi-fused coal and is produced in slabs about 3½ inches thick which are broken up into pieces of a convenient size.

While the washing plant, sulphate recovery plant, condensers, etc., follow orthodox practice, special interest ranges round the retorts, of which there are at present over 100, with an ultimate capacity of 200. Each retort is capable of handling 3-12 cwt. charges each day of 24 hours.

Fuel

This consists of a mixture of coking and non-coking slack in the proportions of 30 to 70. The fuel is mixed in a washer in the correct proportions, which reduces the ash content of the mixture to about 5 per cent. This washed slack carries about 12 per cent of moisture and the 12 cwt. charge pro-

*See American Gas Journal, Nov. 11, 1922.

duces 970 lbs. of coalite, of which less than 4 per cent is breeze. A complete coal handling installation forms part of the plant.

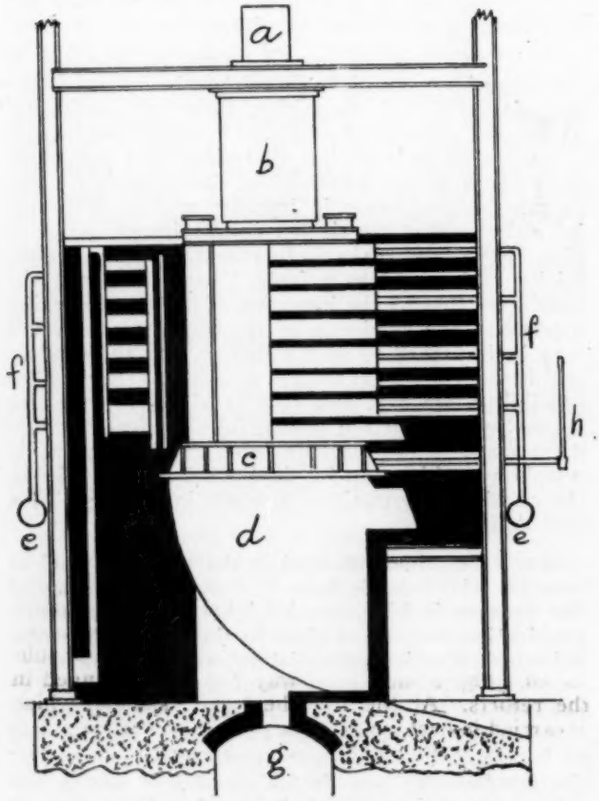


Fig. 1—Arrangement of Retorts and Setting
a coal conveyor; b coal hopper; c retort door; d cooling chamber; e-e gas mains; f-f vertical gas riser pipes; g waste heat flue; h retort door opening lever.

Construction of Retorts

The main interest of the plant, of course, lies in the retorts, which are patented by T. M. Davidson, who claims to have overcome the difficulties inherent to the cast iron retort by using manganese cast iron. The apparatus consists of three essential parts: first, a hopper, in which the coal is collected; second, an oven of rectangular form, between which and the hopper a rotary door is provided to permit of the coal falling gently into the oven at pre-arranged periods of time, and, third, another rectangular chamber below the oven, which is gas tight and into which the carbonized coal is discharged by means of a second rotary door, and from which it is removed when cool through end doors.

Lengthwise of the oven are suspended two vertical cast iron plates, normally kept at a fixed distance apart, but capable of being drawn together by means of a hinged rocker to permit of the material gradually falling into the cooling chamber. The washed slack is filled into the spaces between the plates and the oven walls, the space between the plates, however, being kept clear for the escape of gas.

The arrangement is shown in diagramatic form in Fig. 1. The ovens are heated by means of gas flames, which are caused to pass backwards and forwards along the walls of the oven and transmit their heat to the fuel, while the gases of combustion are drawn off through the center plates, which also serve to keep the coal compact.

The retorts are built of firebrick, each retort having a total depth of 9 feet 6 inches, a top length of 7 feet 3 inches and a bottom length of 7 feet 6 inches, and a width of 11 inches. They are arranged at a center distance of 21 inches and as shown have semi-circular ends.

Each retort stands on a cast iron cylindrical casing containing a rocking cylindrical valve upon which the charge normally rests. These valves are operated by external levers. The door spindle is tubular and water is fed into this tube, where it is evaporated, the steam escaping through holes in the door plate, means being provided to prevent the water from escaping also. The object of blowing the steam on the fuel being carbonized is to facilitate the release of the ammonia. When one of these valves is opened the charge is dumped into the cooling chamber below, the cast iron plates before mentioned having been collapsed.

Cooling Chambers

One of these cooling chambers is shown in Fig. 2. It is made of sheet steel with water jacketed sides and a curved back, the former being divided up by thin plates, fixed centrally, so as to divide the water into two streams, that adjacent to the interior rising as it becomes heated and being replaced by the cooler water from the outer space. This arrangement has the effect of cooling the red-hot charge before the final product comes into contact with the atmosphere. Thus the sensible heat is usefully recovered and the quality of the coalite is unimpaired by either combustion or water. The heat of the cooling chambers in the form of steam is used for fractionating the tar oils.

To withdraw the coalite the door which closes the front of the chamber is opened and the material raked out, an operation which is facilitated by the sloping back of the chamber. These doors are made air tight and gas tight by means of a sharp edge, which bites into asbestos packing which is packed in a groove in the frame, pressure being applied by a handwheel and screw arrangement.

Fig. 1 gives a section through the retort settings. As stated before, they are heated by gas, and in this plant retort gas is used, but a Mond producer is also available. The mains run along the bench on both sides. From these, vertical risers ascend and supply small horizontal pipes, which enter the settings. One side of the retort is heated from one main and the other from the second one. From Fig. 1 it will be seen that the heated gas from the upper burner on the right-hand side passes horizontally across the side of the retort, then down to a damper in the next horizontal passage, and so on in a zig-zag path

through all the passages until it reaches the bottom when it enters the regenerator passages.

The positions of the various dampers at the end of the passages are controlled by means of the small doors on the faces of the setting. The flame from the second burner from the top meets the hot gases from the first burner in their third pass and the flame from the third burner meets the combined flow in the fifth pass, and so on, an arrangement which has been found satisfactory.

The collapsible plates which are situated under each retort permit a ready escape of gas from the coal and cause the carbonized charge to fall freely into the cooling chamber when the dumping door is opened. The success of the installation depends a good deal on these plates, because the jamming of the charge in the retorts has formerly been one of the main difficulties in connection with the L. T. C. system. In addition to this, the forced passage of the gas through a dense mass of heated coal is liable to affect its quality.

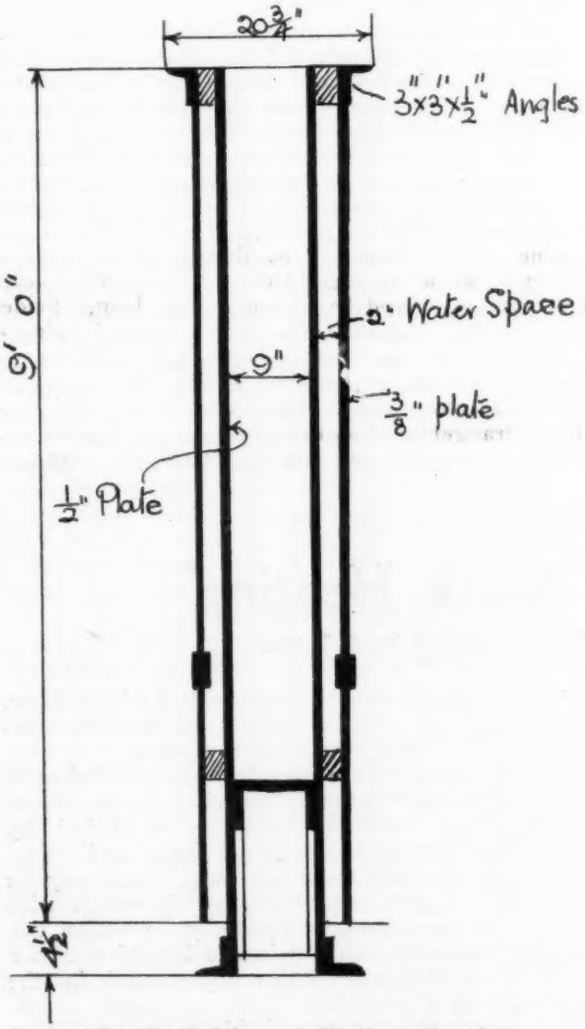


Fig. 2—Section of Cooling Chamber

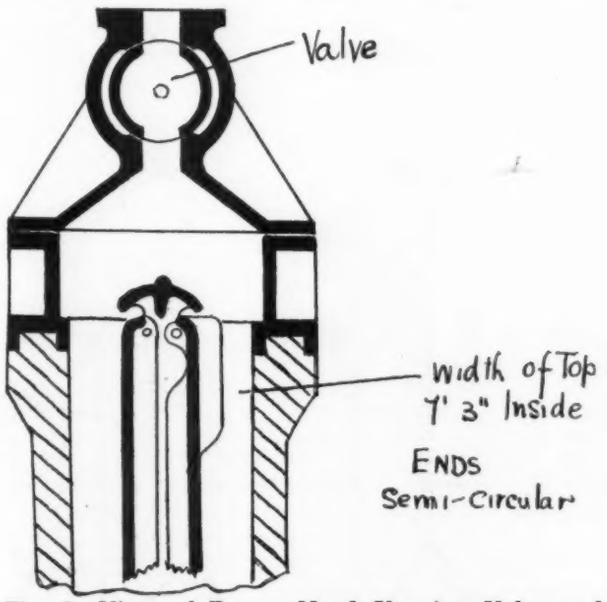


Fig. 3—View of Retort Head Showing Valve and Plates

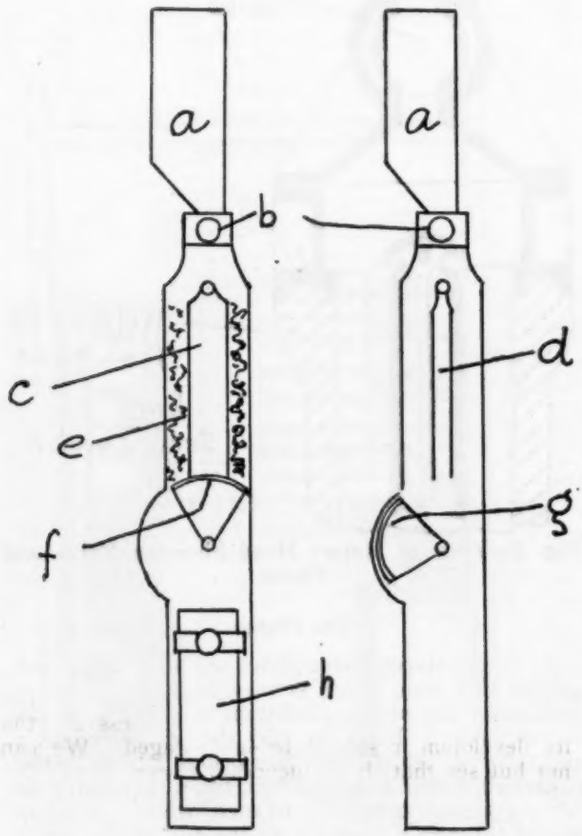
The Plates

As before stated, these plates are made from manganese cast iron, which is very hard and stands up well under the severe conditions to which it is subjected. Fig. 5 shows the way they are arranged in the retorts. At the top, the bridge spindle, which is carried in cast iron bearings, has a castellated nut for the engagement of a wrench, which can be inserted through a manhole at the top of the retort. The whole of the ironwork can be withdrawn as a unit, because the bearings referred to merely rest in position. The plates are made in three parts. This is merely for convenience of manufacture.

The sections are afterwards bolted together to form complete plates 9 feet 6 inches long and 6 feet 5 inches wide. Normally the tops of these two plates are at the same level, and the bridge piece shields the space between them so that, when the retort is charged, the coal is deflected by the bridge and separated into two streams, which fill the spaces between the outside of the plates and the side walls of the retorts.

Flow of Coal in Retort

This is shown clearly in Fig. 4. The plates are kept apart by flange abutments, which prevent them being forced together by the pressure of the coal so long as the plates are level with each other. At the lowermost of these pairs of abutments the plates are connected by links which prevent the former being separated by more than a predetermined amount. This can be understood from Fig. 3. When the bridge piece is rocked over to one side by the spanner, one plate rises slightly and the other falls by an equal amount, the pin joints at the top and bottom causing the plates to come together. To



Reference: a coalhopper; b valve to admit coal to retort; c collapsible plates, open; d collapsible plates, closed; e stack; f revolving middle door, closed; g revolving middle door, open; h cooling chamber.

allow of this, the abutments slide past each other. Occupying a space of 5 inches, when held apart, these plates only occupy 3 inches when collapsed, so that the charge, being completely freed, can fall instantly when the dumping door is opened.

Properties of Coalite

The coalite has practically the same calorific value as the coal from which it is produced, but is lower in ash. It gives out more radiant heat than coal, due no doubt to the nature of its surface and its greater surface for a given weight. This is of importance, as far as British practice is concerned, as the main use sought for coalite is the domestic grate, which is a feature of British dwellings where central heating is very rare and gas has quite a limited use despite its advantages.

The heat required to convert a ton of coal into coalite is about 2½ million B.t.u. as compared with 3 million B.t.u. for ordinary high temperature carbonization, assuming gas heated retorts in both cases. The gas produced by L. T. C. has a very high calorific value, but at the plant in question it is all used for heating the retorts.

The tar produced is of considerable value, is of a light specific gravity and resembles crude oil in appearance. Its free carbon content is less than 1 per cent and it contains no naphthalene and much less pitch than ordinary tar. The residue, about 43 per cent bulk, permits of the extraction by steam of a heavy lubricant resembling vaseline and the tar oil itself can be used in cold starting oil engines while two gallons of motor fuel are produced per ton of coal. The commercial value of the system outlined lies in the sale of the coalite and by-products, the raw material being to all intents and purposes waste. As, therefore, there appears to be a good sale for the coalite and other products, as opposed to little or none for the raw material, there is no doubt that in time the process will be further developed and be one more step towards the reduction of smoke and the conservation of fuel resources.

The Question of Space Heating*

By Stuart Cooper, General Manager Charleston R. & L. Co.

In any investigation of the advantages to be derived from the sale of gas fuels for space heating, and of the problem arising in connection with, and resulting from such sales, it becomes apparent at once that conditions existing in various localities must determine different viewpoints from which to study the problem, and different bases upon which to set up such figures and calculations as are necessary to the solution of specific cases.

Even between localities not widely remote from each other, there are often wide differences in the characteristic demands made upon public utilities by their consumers, with the result that, while in general the problem of one is the problem of the other, every particular problem requires a separate solution for each locality to which it applies.

For this reason, the writer has not undertaken in this paper to enter into any technical discussions or to attempt any concrete proofs as to the advisability or inadvisability of the sale of gas for space heating, for such discussions or proofs must necessarily be based upon specific conditions, which would, with one or two exceptions, undoubtedly be unlike the conditions actually existing in the localities where are operated the gas utilities represented in the Southern Gas Association.

It is rather the purpose of this paper to discuss space heating in a general way as applying particularly to such localities as experience mild winter

*Paper read at Southern Gas Association, St. Petersburg, Fla.

temperatures, typical of the South Atlantic and Gulf States, where winters are short, and where such temperatures as are typical of the coldest winter days are experienced only a few days in the year, these being interspersed with others which are mild and often warm.

It is further and primarily the purpose of this paper to promote discussion of the subject by bringing out one or two new phases of the relative value of space heating as compared with the better established lines of gas business, and by showing how relatively small increases in investment in plant facilities may, under the present condition obtaining in many of our Southern plants, make possible the acquisition of considerable though limited additional profitable business.

There has arisen and still exists in the minds of many executives and sales managers a great doubt as to the wisdom of seriously undertaking the acquisition without limitation of space heating load.

It would manifestly have reflected poor management during the several preceding years to have developed production plants, holders and distribution systems, amply sufficient (as they should be in normal times) to meet the abnormal demands of a period of unusual industrial activity and domestic prosperity, increased by the added demands which would have resulted from reasonably aggressive sales effort directed toward space heating business.

In the Southern and Gulf States, and especially in cities so located as to be affected by the war time activities of 1917-18 and 19, and the continuation of industry in 1920, space heating business came to many of the gas utilities unsolicited in such quantities as to strain almost to the failing point, the resources of those men responsible for the physical operation of the plants, and those others upon whom fell the burden of financing sufficiently great extensions in plants as were necessary to meet the sudden and unexpected demands. These sudden demands were abnormal and unnatural, and did not suggest substantial and permanent development in the industry. Many of them resulted from the absolute inability of the consumer to obtain supplies of the other fuels which he had been using for years. Then again, the shortage of labor and the high cost of domestic servants had its influence tending toward the purchase from the gas company of that "Service" previously performed by those servants.

The gas utility was, of course, naturally expected to be willing and ready to accept all applicants for any service requested. It was confidently expected, too, to have adequate stocks of fuel at all times, even though many of its consumers were unable to purchase such fuels themselves.

To appreciate the result of this sudden flood of business, the plant load conditions peculiar to gas utilities in this section of the United States must be kept in mind. Unlike many utilities farther North, the plants and distribution systems of many in the Southeastern States, experience their heaviest loads during the winter months. While consumers in localities in which colder temperatures are felt resort to coal and wood heating systems during the winter months, and combine their cooking and water heating arrangements with their space heating facilities, consumers in milder latitudes do this to a much lesser degree. The tendency in the colder climate to lighter loads during the winter is reversed where the continued use of the gas range and water heater during the winter months results in increased consumption of gas due to greater radiation losses, and to lower initial temperatures of water to be heated, or provisions to be cooked.

In these localities our production plants, distribution systems and organizations, regardless of space heating, must carry their "peak loads" during the cold months of the year; theoretically, the maximum demand will fall upon the coldest day.

A consideration of space heating load for such localities then begins with the premise that this business is such, and only such as can be had for a short period of the year, and that it falls upon the plant during the period of its otherwise established peak loads.

With this consideration and keeping in mind the tremendous pressure of soaring fuel and oil prices, the labor troubles, the shortages in plant capacity, it is not to be wondered at that gas utility executives expressed hesitancy in going after this kind of business even to the point of refusing or discouraging such as came unsolicited. It is, however, to be regretted that the influence of these times of stress was so great as to leave some of us believing still that there is no merit in this class of business and that its development should be discouraged. We cannot but see that the influences of these chaotic conditions are now largely dispelled. The abnormal conditions are rapidly giving way to the settled conditions of normal and prosperous times, and we see in our own business through the readjustment of rates which has taken place, and the simultaneous adjustment of production and distribution costs, a very much more hopeful vision of the future, than has been the case at the last several meetings of this convention.

This return to normalcy has involved a widespread tendency on the part of persons everywhere to take up again modes of living similar to those in vogue before the world disturbance took place—with one exception. The great mass of American people are living today in greater comfort and individually and collectively enjoying more than ever before what but a few years ago were looked upon as the luxuries of life.

This tendency toward the restoration of the former conditions has to a great degree restored to its former and logical prominence everywhere, common space heating fuels, coals and wood. The exception to the tendency toward the restoration of former conditions suggests that there is permanently opened up to the gas utilities a great field for the sale of gas fuels for water heating and space heating to a large class of people whose incomes have, during the last five years, increased by such amounts as to make it possible for them to avail themselves of the "service" which the gas utility renders.

The one condition puts us back into natural competition with fuels, which, up to a few years ago, were easily obtainable, and which were widely used and commonly believed to be far superior to the consumer from the standpoint of cost. The other condition offers us the opportunity to grasp and make profitable if we can, a large amount of previously unattainable business which legitimately belongs to us.

So much in justification of the state of mind in which we find ourselves regarding space heating, and for the tendency of this business, if left to itself to disappear, or at least to increase but slowly. Shall we let it take its course and devote our energies to the development of less questionable lines, or, having been given an opportunity to expand our industry along new lines, shall we go vigorously forward in the active pursuit of it?

To the executive operating a plant upon which the peak load falls other than during the cold winter days, there can probably be but one answer. No one desires to overlook any opportunity to load up his plant during its idle hours and thus to improve his annual system load factors, and any additional business which may be had at periods off the annual peak is certainly to be sought after. No additional plant facilities are required to supply this service, consequently, rates for such service may even now be made so attractive as to result in the acquiring of a considerable space heating load.

Many of our co-laborers in the industry, operating in latitudes where maximum loads up to this time have occurred during summer months, have recognized the opportunity afforded by space heating to load up and utilize profitably their idle equipment during off peak seasons; and they are already pushing forward campaigns to sell the consumer this new "service."

In communities where annual maximum loads occur during the summer and coal is used largely during the colder winter months, and where gas at existing rates cannot be made to entirely displace other fuels because of cost, it is felt that it may be made attractive as a fuel during the months just prior to and just after the few colder winter months that require the continuous operation of fires in heating plants.

In the case of the utility, however, whose normal annual maximum load falls upon the coldest day of the year, the answer to the question can be found only after very mature deliberation.

We might say at once that it is largely a question of the rate at which service is sold, and we can concede the fact that if rates could be had without costly delays, which would yield adequate returns upon all the plant necessary to handle all the available business, including space heating, we would be missing opportunities as business men if we did not follow every possible line of expansion. But this condition is not assured us.

Rate structures from which are worked out our common existing sliding scales for gas service which provide rapid reductions in the price per thousand as the consumption increases will very probably have to be revised before such rates can be applied effectively to short season heating business.

The development of sliding descending scale rates now largely in use has been based upon actual past experience in the utilization of gas. To express it simply, we figured a rate that would reimburse us fairly upon the assumption of a certain daily utilization of gas. This utilization is assured as fairly constant from day to day, and consequently from month to month. Then having established this figure, we say: Now, if we can induce our consumer to use this service more hours per day, we can afford to sell him this additional service at a lower price, because from the profit of this additional sale must come a much reduced portion of the overhead charges.

Thus most of our rates are built up on the fabric of the characteristic tendencies which have naturally developed in the industry since its beginning.

But this kind of a rate may easily fail when used for billing for gas service rendered during a few cold days, because it provides a low rate for actual service rendered at relatively high cost.

The so-called three part rate under yearly contracts would handle this situation admirably, but unfortunately the problems of application of such a rate do not yet appear to be solved.

Again, it can easily be conceived that a sliding scale with prices increasing rather than decreasing with the succeeding blocks on a monthly basis would more properly apply in the case of consumption for peak-load space heating, but since this is so radically different from the practices in all business, it is probable that its application could never be successfully made.

The nearest practical approach to a solution of this situation that has appeared to the writer is a rate having a proper service charge, and then a flat or nearly flat price for all consumption to domestic consumers and all others whose service includes space heating privilege with special contracts for hotels, restaurants, laundries, and any and all large daily consumers; such contracts providing a block rate with substantially reducing scales for successive blocks, but providing also that no space heating appliances, or, if preferred, a very limited number of such appliances, shall be used. This would probably make necessary the use of two meters in such cases as involve the use of gas for space heating by largely commercial or industrial users.

This plan is not theoretically correct, but for all practical purposes meets with approximate accuracy the conditions to which it applies, and has the advantage of being one to the application of which no great objection would be made by the consumer as being radically different from rates, to the general character of which he has become accustomed by long experience.

In the electric industry it is not at all uncommon to find in one situation four or five different rates, designed to meet the needs of the various industries,

(Continued on page 571)

As the Journal Views It

WINNING SUCCESS BY KINDNESS

There is a well-known fable, attributed to the famous author of antiquity, Aesop, which tells a story about the strong, mighty Wind, and the warm, kind, generous Sun, and their contest to see which was more powerful. The tale reads that they selected a man with an overcoat buttoned around him as the test of their strength to see which of them could force the man to remove his coat. The wind blew mightily and with great violence, but the harder it blew the tighter the man wrapped his coat around him. The wind gave up in despair. Then the Sun, smiling and gentle, sending forth its warm, life-giving rays, soon, without any display of violence or force, compelled the man to remove his coat.

We do not know whether the executives managing the affairs of a certain gas company in a mid-Western State consciously put the wisdom of the ancient Aesop to test in a modern, practical situation or not, but they certainly were able to accomplish their end and attain their goal much in the same manner as the Sun removed the overcoat from the man. In a modern story the goal was a franchise which the gas company was finding great difficulty in securing because the people in the community thought that the gas rate was too high.

Instead of using strong coercive methods in gaining their end, the gas company wisely adopted a more pacific course, which, though not probably so quick in producing the desired result, nevertheless has gone much further in creating and disseminating a strong spirit of good-will and friendly feeling throughout the community in favor of the gas company. The gain is the gas company's, a gain which is bound to have important effect on the future standing of the company in the community.

How did this come about? The method was as simple as effective. The gas company sent its men around to the consumers' houses to do missionary work; to show the consumers how to save money by using gas more efficiently. The gas inspectors instructed the people how to adjust the gas burners in cooking ranges and stoves so that the inherent heat value of the gas could be rendered available as effectively as possible. The people were taught how to save money in their gas bills and results were soon forthcoming.

Now the community has lost its antipathy towards the gas company. Its viewpoint has been entirely changed. The gas company is no longer considered as a rapacious enterprise existing solely for the purpose of mulcting the public. The community recognizes now that the gas utility is a public servant that can and does give valuable service to its customers. The franchise is now assured.

UTILITIES MAKE FOR PROGRESS

A man is known by the company he keeps. A community is judged by the public utilities that serve it. A city or town or village, in fact, any group of individuals living together in a well defined unit, is dependent for its progress, its future development, the very prosperity that it enjoys, the reputation that it bears amongst its visitors, the industrial world and the county at large, on a number of factors, among which one of the foremost is its public utilities.

We read last week of a case which happened in a large city in New York State, where the people objected to the building of a gas holder, an enterprise which the gas company was undertaking for their direct benefit. Of course, a gas holder is not the most beautiful piece of architecture known. It is not built to catch the artistic eye, but it forms a most essential part of the gas works and is used to store gas so that consumers may be able to obtain gas whenever they want it.

This objection must have been due to a misconception on the part of the people. They did not understand the necessity and the purpose of the gasholder and they did not realize that without gas holders there could not be a gas works, and without gas works there could not be a city. Gas companies must educate their consumers to the real value of the gas company, to the real service that it gives, and to the real status that the gas company occupies in their community. They must be taught that the progress of the city has been made possible through the gas utility and the other utilities that it possesses, and that progress cannot go on unless the people allow public utilities to expand and grow first.

Their growth and their expansion must precede the growth of the city, or at least must take place simultaneously with it. No one would think of moving out to a new section of the city unless there was

gas in the mains so that food could be cooked; unless there was some means of transporting the people back and forth in that section. Gas companies cannot develop without developing their plants as well, and the erection of a new holder is simply an indication of the growth of the gas company, the progress of the city, the increase of its prosperity. The people should welcome such an indication rather than reject it, for to them it means that their city is getting bigger, becoming better known as an industrial community, is attracting more people to its industries, and in doing so, is enhancing the prosperity and welfare of all its inhabitants.

FUEL OF THE FUTURE—WHAT SHALL IT BE?

The leading article in this issue of the American Gas Journal is concerned with a subject which is of the greatest importance to the gas industry. The fuel of the future, what shall it be? is in fact a question that transcends in its importance all other matters connected with the gas industry. The aforementioned article is the first of a series that will deal with fuels and their uses in comparison with gas. The articles will take up in detail the various fields in which gas is, can and should be used as a fuel. The uses of gas to be discussed will not be limited to the domestic field alone, but will embrace the entire industrial field as well. The series will cover all the possible uses of gas in all the various branches of industry and will show what results are to be expected or are obtained from gas in comparison with other combustibles.

These articles will be of great interest to the gas industry and they will contain information that will be valuable to gas men. The first article which deals with the sub-title, "Fuels and Their Classification," is intended to serve as a general introductory article of the series. The second article of the series will follow shortly.

Important Plans Outlined for Fifth Annual Convention of American Gas Association

Oscar H. Fogg, secretary-manager of the American Gas Association, has sent the following letter to the manufacturer company members. In it Mr. Fogg points out how the manufacturer company members can create a widespread interest in the meeting and impress the importance of the gas utility on the minds of the public:

"I wish I could get our manufacturer company members together in one group for a few minutes and tell them about some of the big plans we are making for our Fifth Annual Convention and Exhibition on the Steel Pier, Atlantic City, October 15 to 19, 1923.

"Without wasting any words, let me say now that our October meeting is going to surpass any gas convention ever held before—surpass it in attendance, number and variety of exhibits, strength of program, entertainment features, etc.

"I need not give more details here about the convention itself—you will find them on the attached sheets. But what I do wish to emphasize in this letter is the importance of advertising the convention thoroughly and persistently for the next four months, concentrating on two general classes of audiences—first, the gas consuming public; second, the gas industry and industries allied with it—in other words, the very persons you do business with every day.

"We at headquarters will concentrate on the first class. Just a word, however, to those companies who advertise nationally in the Saturday Evening Post, Literary Digest and other mediums. One advertisement devoted to the annual convention and its importance to 45,000,000 American people who use gas service will do more good than a trainload of literature issued from this office. There is ample time to prepare copy and illustrations for such an advertisement. We will give the facts to your advertising agency—indeed, we'll co-operate to the limit in any way you suggest. How many companies will step up to the front and do this for us?

"Now, as regards the gas industry and allied industries: In reaching this class of audience you are talking to your own customers, and the idea to impress upon them is that the gas industry is knit together into a big national family, that this family meets in Atlantic City on October 15 to 19 for its annual reunion and that under one roof is shown the largest and most modern and complete exhibition of gas appliances, equipment and products ever gathered together at one time on one place.

"We want to exploit the idea that this year's convention and exhibition is the 'style' show of a four billion dollar industry, dedicated to service; that the appliances, equipment, etc., exhibited represent more than a hundred years of accumulated research and inventive work by the best engineering talent in the world; and that the ideal of every manufacturer is to furnish safe, efficient, durable equipment that will render the highest service to the public.

"That, very briefly, is the kind of story you manufacturers might tell. And in the telling of it you should exploit yourself, your wares and your place in the industry. If you are proud of the equipment you will exhibit at Atlantic City, start right now to tell the world about it and add to your self-exploita-

tion a good measure of publicity for the gas business, its importance to the country, etc. Let's get enthusiastic about our business, our services, our equipment. Let's tell the nation how necessary the gas industry is to its domestic and industrial life. Let every prospect, every customer, every person on your mailing lists know about you and your business. And make the national convention the pivot around which you build your story.

"Here are some specific ways that might be utilized:

1. National magazine advertising (I have already touched on this).

2. House organs, special bulletins, sales letters, etc., to entire mailing lists.

"First, exploit your company and your convention exhibit. Tell why you are exhibiting and what a national convention of the gas industry means to you and your customers. Give facts and figures about the industry. State how important a part you play in its destiny. Give a history of your company—let it be known that you manufacture quality goods—that you are helping to improve gas service, etc., etc. Above all, play up the line 'Steel Pier, Atlantic City, October 15 to 19, 1923.'

"3. Trade paper advertising.

"Here you will be talking to gas men—the fellows we want to register at Atlantic City. Come out openly and boost the convention. Play up your exhibit and the convention program. Let the gas men know who will be in charge of your booth—publish their photographs or the photographs of your sales force. Talk convention from first to last—your reasons for exhibiting—and what you will exhibit. Coin a slogan and run it in every ad. If this were an automobile show you would see 'This is a Studebaker year' plastered everywhere.

"4. Special illustrated folders to your mailing lists.

"If you want to deviate from your regular forms of direct-by-mail advertising, we know of printers in New York City who will submit free of charge layout, prices, etc., of one or more folders. We will arrange details for you if you wish to take advantage of such an offer.

"I know that many of our manufacturer companies are going to devote special attention to advertising themselves and their convention exhibits this year. But the fellows who start early and hammer away at it are going to get the jump on the others and profit in a definite dollar and cents way during the week of October 15 to 19.

"Start now and use every method at your disposal to make the Fifth Annual Convention the biggest business success in your lifetime and one that will make history for the gas industry. Use the facts on the attached sheets. Ask for additional material if you need it. We at headquarters are with you 100 per cent strong.

"I know you are interested. But a reply from you stating that you will co-operate will help us a lot."

Rules and Regulations

The American Gas Association has issued a pamphlet containing the rules and regulations covering the Fifth Annual Exhibition to be held in Atlantic City, N. J., October 15 to 19, 1923, inclusive.

I. Management of Exhibition.—The exhibition is under the management of the Manufacturers' Section of the American Gas Association.

II. Application for Space.—Only company members in good standing may exhibit. Exhibitors must file a written application for space with the secretary of the Exhibition Committee and all applications are subject to the approval of the Exhibition Committee.

III. Space Rental.—A payment of $25 must accompany each application for space, the balance to be paid within thirty days of the date of notification of allotment of space. Any exhibitor who shall fail to make the final payment within thirty days from the date of the allotment shall at the option of the Exhibition Committee forfeit his rights in and to the use of such space, as well as the amount already paid, and the Exhibition Committee shall have the option to dispose of such space as it considers for the best interest of the exhibition.

The rental price includes booth railing, sign designating the name of the exhibitor, one table and three chairs. Additional decorations or signs will only be permitted on approval of the Exhibition Committee and will be at the expense of the exhibitor.

No additional charge will be made for gas, water or electric current used in reasonable quantities for demonstration purposes.

IV. Allotment of Space.—Space will be allotted by the Exhibition Committee in the order in which applications are received.

No more than two of the large (15x15 feet) booths or the equivalent area (450 square feet) in booths of smaller size will be alloted to any one exhibitor and then only subject to the approval of the Exhibition Committee.

The number, size and location of booths will be indicated on the notice of allotment.

V. Subletting of Space.—No exhibitor shall assign, sublet or apportion the whole or any part of his allotted space.

VI. Shipment of Exhibits.—Exhibits shipped via freight must be crated and shipped, transportation charges prepaid, to the exhibitor himself, c/o Eldredge Express & Storage Warehouse Co., Atlantic City, N. J., and must have the space number plainly marked thereon.

Exhibits shipped via express must be shipped transportation charges prepaid addressed to the exhibitor himself, Steel Pier, Atlantic City, N. J., and must have space number plainly marked thereon.

Original B/L should be sent to Eldredge Express & Storage Warehouse Co., Atlantic City, N. J.

All exhibits must reach Atlantic City not later than October 11th.

All cartage will be charged to the exhibitor.

VII. Installation of Exhibits.—All exhibits must conform to the size of their space.

On arrival of exhibits in Atlantic City, the Exhibition Committee will take charge of same, unpack and install under the personal supervision of the exhibitor's representative.

Exhibits of a nature that obstruct the view and interfere with the privileges of adjoining exhibitors will not be permitted.

All exhibits must be complete and in place by midnight, Saturday, October 13th. No work of any nature will be permitted on the exhibition floor after that time except in case of exhibits received after the opening of the exhibition. These must be arranged in their booths prior to 9 a. m. each day.

VIII. Souvenirs and Advertising Matter.—The Executive Board of the American Gas Association has ruled that souvenirs are not to be given away by exhibitors at the 1923 convention and exhibition.

All advertising matter with the exception of catalogues must be approved by the Exhibition Committee before being distributed.

IX. Hours of Exhibition.—The exhibition will open on Monday, October 15, at 10 a. m. It will be open each day from 10 a. m. to 6 p. m. The exhibition will close on Friday, October 19, at 4 p. m.

X. Removal of Exhibits.—All exhibits must remain in place and intact until 4 p. m. Friday, October 19th, when the Exhibition Committee will recrate and ship them in accordance with instructions furnished by exhibitors.

To facilitate this work, all crates must be made of strong and durable material and must be screwed together and have shipper's name marked thereon to insure their identification.

No material may be removed from the Pier at any time without the written permit of the Exhibition Committee.

XI. Liability.—Neither the Manufacturers' Section of the American Gas Association nor its representatives shall be held responsible for any injury to exhibitors or their employees, nor for the loss of or damage to any goods from any cause whatsoever while on exhibition or while in transit to or from the Steel Pier.

E. E. Basquin
W. H. Jefferson
B. B. Kahn
W. L. Smith
F. A. Lemke, Chairman
C. W. Berghorn, Jr., Secretary.

BAKING JAPANNING BY INDUSTRIAL GAS

The use of gas for industrial purposes is always of interest to the gas man and at the present time, due to the recent developments that have been taking place in the American Gas Association and in the gas industry as well, industrial gas applications have become even of greater interest. In a recent issue of the Peoples Gas Club News, there was published a very valuable and interesting article on the use of industrial gas in japanning.

Japanning is a process which consists in coating metals with a thin film of japan, which is then baked at the proper temperature to form a hard lustrous and highly protective covering. The main characteristics of baked japan are its decorative effect and durability, and for this reason it is used on automobile parts, furniture, bed springs and hundreds of other articles made of metal.

A japan is a sort of high-grade enamel, but possesses special properties of its own. It contains linseed oil, gum or pitch, a drier, a color and a solvent. Efficient japanning consists not only in the selection of ingredients of proper quality and mixing them in proper proportions, but also in the proper application of the japan to the article and the correct heat treatment in the subsequent baking process.

The japan may be applied to the article in three different ways. However, before the articles are japanned, they must be thoroughly cleaned and all oily and greasy matter must be removed either by dissolving them off with gasoline or other solvents, or else by burning them off in a gas fired oven.

The cleansed articles, if they are small, such as automobile fenders, may be dipped directly in a tank of flowing japan and then carried by conveyors to the baking oven. Large surfaces which cannot be conveniently dipped can be coated by flowing the japan over them while they are held in an inclined position.

The next step is to bake the japan on the metal. This is perhaps the most important stage in the process, and in order to secure a durable, hard, elastic finish of good appearance, the following factors must be taken into careful consideration, that is, time of baking, the temperature of baking, the temperature gradient within the oven, the uniformity of temperature and the air conditions in the oven.

The use of gas for heating the oven is an essential factor in making perfect japanning possible. There are two methods of supplying heat to japanning ovens.

In the first method the ventilating air and radiant heating means in the indirect gas-fired oven are both maintained at the desired temperature. This is accomplished by burning the gas in small separate ovens that serve as fire boxes or combustion chambers. Above these chambers there are mounted a series of air heaters or radiators which are in reality flues arranged longitudinally along the sides of the oven.

In another type of modern baking oven a gas-fired air-heater is used. This is independent of the oven itself, which functions merely as an air-heating device. The hot air from this heater is blown through longitudinal tubes in the oven and after emerging therefrom it is reheated in the gas heater or is allowed to escape in the atmosphere.

THE QUESTION OF SPACE HEATING

(Continued from Page 566)

interests and classes of consumers, whose operations demand, or at least justify, different rates for the service rendered.

The first consideration of space heating business then, is that a rate for gas sales be in effect, or be available for application, that will result in a proper over all return, but usages of years demand that, if changes in existing rates are necessary, the rate adopted must be in some form with which consumers are thoroughly acquainted, and of such proportions as to provide a reasonably fair adjustment of cost upon the various classes of consumers. As no community would presumably tolerate a substantial increase in its gas rate simply to allow a gas utility to supply at a loss certain short season demands on the part of space heating consumers for service which has not up to this time been considered an essential obligation upon gas utilities, it appears necessary that for the present at least the acquisition of space heating load shall not result in any very great increase in the rate paid for other service.

In endeavoring to find whether our present average rates, properly modified but without substantial increases will provide a profit upon open space heating sales, let us look back for a moment to conditions applying to the successive steps in the development of the gas industry. The early pioneers in the industry sought to develop a new medium to furnish light to various consumers. It is safe to say that the average hours per year that the lighting consumer uses gas is $4 \times 365 = 1{,}400$ out of a total of 8,760 hours.

From the operations of these 1,400 hours not only operating expenses had to be paid, but taxes, depreciation, and all overhead expenses, including return on the investment. Needless to say, the rates per thousand sufficient to meet these charges were relatively very high. Having succeeded in this endeavor, however, our predecessors very naturally began looking around for new kinds of business to add to this lighting load at diversified hours. They decided that they could sell gas cheaper for fuel for stoves used during daylight hours, because it provided diversity and came at periods off the "peak load" hours, which had now become a factor. Many companies put in additional meters for this service, and sold gas for cooking at a reduced rate. The result was that, by the great increase in demand for fuel or stoves, gas lighting service rapidly became secondary to gas service rendered for cooking, and the employment of one rate, a now much reduced rate, was again effected. Simultaneous development in the electric industry of course contributed to a considerable degree to the curtailment of the development of gas lighting loads and the elimination of lighting load problems as important factors in gas utility operation.

The gas stoves did much better than the lights as consumers of gas, but they weren't individually used nearly as many hours per year. I believe it safe to say that the average gas stove even before the advent of the modern gas water heater was not used more than 1,000 hours per year for cooking and water heating purposes. We find that our costs of operation and profits must still come from the use of appliances, each being used only 1,000—1,400 hours per year, but our hourly, daily and yearly diversity factors in the use of these appliances is such that the annual sales have increased much more rapidly than the output of the maximum day. Thus a given investment has been made to provide for more business with consequent ability to reduce rates. The water heater comes along as a rapidly developing appliance, the actual use of which in a residence is probably less than 200 hours per year.

Here we find even a greater diversity in the use of water heaters during all hours of the day, no characteristic demands ever having been imposed by it, upon gas plants as has been the case in the use, first of the gas lights, and then of the gas stove.

Each successive step in the development in the major applications of the use of gas, excluding industrial appliances, has resulted in an improvement in the diversity factors, and each improvement in diversity has resulted, directly or indirectly, in increasing our sales per dollar of investment which in turn has resulted in a reduction in rate. Space heating loads as observed up to this time for the localities to which reference is made, provide probably the lowest annual diversity factors yet dealt with, but of course different for each locality. The business is available only approximately one-third the year, and is absolutely lacking the rest of the year. Space heating loads may be experienced over 60 to 90 days during that part of the year when the loads from other appliances are heaviest, and be almost entirely lacking during all other days of the year. Again, by reason of climatic conditions, space heating loads may be relatively heavy one year, and relatively light the next.

Without attempting to reduce this to mathematical terms, it is apparent that this load of low diversity, if added to our present load, will result in reduced diversity for the sum total, and thus tend toward higher rates, unless offset by other influences.

The increases in rates suggested will be proportional to the increase in space heating as compared to other loads, and governed further by the relative diversity factors of the different class of business.

Referring again to the operations of the property in which the writer is interested, results show roughly that annual space heating sales equivalent to all other annual sales would impose upon its plant maximum daily loads nearly four times as great as the loads imposed by the more diversified demand. This substantiates the former conclusion that any great increase in this type of business alone must make necessary a greatly increased rate for the service rendered. This ratio will apparently be determined at different localities by the typical usages of the consumers served.

There is one important point, however, to overlook which would be a serious mistake. That is, that in most of our plants, as built up to meet the typical demands of our particular localities, there is standing idle during some hours of every day of the year a considerable amount of capacity which might, under the right conditions, be made to work profitably during that idle period.

This is, of course, a practical consideration, and different for each plant, but where the condition ob-

tains to the extent that production equipment, including scrubbers, condensers, purifiers, meters, and works main are virtually idle for several hours per day, there certainly exists an opportunity to put an existing investment to work. In many cases this can be done by increasing holder capacity and the capacity of outgoing mains, and pushers, if the latter be used, or under certain conditions by making relatively small increases in production facilities. Incidentally, the present tendency to increase distribution pressures is assisting largely in keeping down the sizes of distribution facilities, while increasing their capacities, and by such tendencies we will before long be delivering, through facilities only large enough to provide necessary mechanical strength, much larger quantities of gas than heretofore thought practical in the manufactured gas industry.

If the necessary additional investment, then, in holder or other capacity and distribution facilities to handle additional space heating business, does not cost more per thousand "make" per day than about one-fourth the cost on the same basis of the total production and distribution system, then it will be profitable to make such investment and take on, if obtainable, such business. The fraction one-fourth refers to a previous paragraph. For a particular situation this fraction will be the ratio of space heating business to other business obtainable per unit of total plant capacity per day.

Sales from such investments, at average present rates (if adequate), might in fact be really attractive up to the point of continuous loading upon our production equipment. The added unit operating cost incurred in effecting such sales would be but a fraction of the average cost per thousand sold, and would involve only the variable items in the production costs, slight increases in distribution costs, and practically no additional cost for meter reading, accounting, billing and collections. It costs us no more to read a meter, render a statement, and collect a bill of $50 than one of 50 cents. Insurance and taxes would increase only in the same proportion as the additional investment required bears to the total investment in plant.

In addition, there would be marked improvement in fuel economies resulting from increased hours in the utilization of production equipment, which would tend to improve the operating cost of all gas produced, but it is doubtful, even with all these advantages, if gas for space heating could be profitably rendered at anything like the existing rates when added to the existing business in such quantities as to require proportionate increases at all points in plant facilities.

Apparently, then, we are strictly limited by our individual present conditions as to just how far we can go in accepting space heating business. If we can, through our sales efforts, control the magnitude of it, we can increase our profits up to a certain point, beyond which we cannot go without rates quite in excess of the average rates today.

It may perhaps be fortunate for us that these average rates are such that our best sales effort may be required to obtain even the small volume of space heating business required to load up our space capacity, as suggested above, in view of the differential in cost between gas heating and heating from other fuels. Certainly lower rates cannot be justified to make such utilization attractive to the consumer.

In Southern cities, however, long accustomed to heat their homes by fireplaces, the increased economy of gas heaters over the economy of an open fireplace will assist largely in effecting such sales. Not only have we a very inefficient method of heating to compete with, but one involving a great deal of labor, dirt, and inconvenience, which will all be removed by the application of gas fuel.

It is the belief of the writer that this business should be sought up to the limits suggested above, but that care be exercised in establishing the limit, and in avoiding a continued cycle of minor plant extensions, each a litle greater than actually necessary to utilize space capacity at some other point. It is an outstanding fact, however, that our ability to utilize largely and profitably space heating loads depends upon our finding some other load, in addition to that we now have, which will provide diversity with respect to the space heating.

It is difficult to predict what this load may be—to help us, it must be something which makes upon us substantially lower demands during the cold months than at other times during the year. Water heating load will not meet the conditions, as the gas requirements for water heating increase as temperatures fall. Few industries have cycles in their operation which would be coincident with our needs, and apparently it is up to us, as part of our space heating problem, to develop and work out combinations of gas and other fuels in various industries, so that comparatively large sales may be made in summer and reduced sales made in winter months. To illustrate, a Y. M. C. A. building uses hot water in large quantities at all times of the year for showers and general purposes. The temperature of the water as it is received in the winter must be raised many degrees before it is suitable for bathing purposes, while in the summer months the water is nearly warm enough as received, and requires a much smaller increase.

Can we not combine this use of fuels here economically so we get the summer business?

Similarly, laundries, dairies, bottling works and similar industries require large quantities of hot water all during the year, suggesting the possibility at least that gas might be sold during the warm months in view to the decreased heat requirements and economy of use, giving way to coal during the months of increased demand for heat.

Any profitable industrial applications tending to improve our load factors can be made to offset given amounts of space heating load tending to lower them.

Finally, in summing this study up for discussion, it appears, while no general definite conclusions can be reached to cover all localities, that a number of facts stand out as having particular importance.

First: That utilities having their maximum loads in warm months can improve their conditions by acquiring space heating business at any reasonable rate up to the point that increases in plant facilities are caused by such business.

Second: That sliding scale rates, with substantial decreases in subsequent blocks, are inadequate for purposes of short season space heating.

Third: That utilities having maximum loads in the winter, and having plant capacity unused at certain hours, may take on heating load up to a certain point, even though increases in investment be required. The proportion of such increase to the total

investment will be governed by the rate in use for service, and by the typical loading of the plant.

Fourth: That with a maximum load in the winter and with all equipment in operation during all reasonable hours of the maximum day, so that increases in load will require, directly or indirectly, proportionate increases at all points in the plant involved, space heating service will have to be rendered at increased rates, which will eventually reduce the rate of return or increase the general service rate.

Fifth, and finally: That any great and profitable extension of the space heating business, to compete with other fuels, will be difficult to obtain until substantially lower rates than those now in existence can be made available through the coincident development of other industrial uses, the combined result of which will be an improved rather than a lowered resultant diversity in the daily, monthly and yearly operations.

BROOKLYN BOROUGH GAS COMPANY'S NEW OFFICE BUILDING

Work is progressing on the new home of the Brooklyn Borough Gas Company, located on West 17th Street and Mermaid Avenue, in the centre of Coney Island's business district.

The first floor contains a show room for gas appliances and working space for clerks serving the public.

The mezzanine floor accommodates the administrative offices and a large room to be used for domestic science classes and the demonstration of gas appliances.

The second floor is devoted entirely to the clerical and accounting forces. The third floor will accommodate a laboratory, drafting room, rest room and employees' dining room. The roof will be arranged for the recreation of the employees.

The building is fireproof and the foundation will carry three additional stones to provide for the future growth of the company. Block & Hesse of New York are the architects.

The Brooklyn Borough Gas Company supplies the 31st Ward of Brooklyn, including Coney Island, and the residential section four and one-half miles to the north. It is one of the fastest growing sections in the City of New York, and in addition to the people who live in the territory all year round, Coney Island had over two million visitors in 1922, and this number will probably be greatly increased this year by the added attraction of the boardwalk.

MAKING ICE CREAM CONES WITH GAS

Industrial gas is used in the manufacture of ice cream cones. The apparatus used in making these cones can be best compared to a large wagon wheel about seven feet in diameter lying on the side and three revolving on the axle. This wheel is divided into thirty-six spokes and on each there is a double iron mold. These molds are made in two parts and are shaped like the familiar cones, the outside being a cone shaped cup and the inside part a solid cone itself. The liquid batter is allowed to flow into the outside mold and the inside mold takes its place automatically within the former and squeezes the liquid dough into the shape of a cone.

The molds and cones are heated directly by gas burners and very excellent results are obtained. The gas and air are mixed in the proper proportion into a suitable device and the mixture is fed to these burners through a single tube. This machine will make 2,000 cones an hour.

Brooklyn Borough Gas Company's New Home

Public Utilities Securities Market Report

Prices of Representative Gas Bonds

(Quotations furnished by The National City Company)

Company.		Maturity	June 28, 1923. Bid	Asked
American Lt. & Trac. Co.	Five Year 6s	May 1, 1925	104	105
Brooklyn Union Gas Co.	First Consol. 5s	May 1, 1945	94	95
Brooklyn Union Gas Co.	First Lien & Ref 6s	May 1, 1947	100½	102½
Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore	First Ref. 6s	Feb. 1, 1949	102¾	103
Consol. Gas, Elec. Lt. & Pr. Co. of Baltimore	General 4½s	Jan. 1, 1935	91	92
New Amsterdam Gas Co.	First Consol. 5s	May 1, 1948	80½	82
Denver Gas and Electric Co.	Gen. (now 1st) 5s	Jan. 1, 1949	93	94½
Detroit City Gas Co.	First 6s	July 1, 1947	99½	99⅞
Equitable Illum. Gas Lt. Co. of Philadelphia	First 5s	Jan. 1, 1928	100	102
Hudson County Gas Co.	First 5s	Nov. 1, 1949	93⅜	95
Kansas City Gas Co.	First 6s	Feb. 1, 1942	100½	101¾
Laclede Gas Light Co.	Ref. & Ext. 5s	Nov. 1, 1934	92	93
Laclede Gas Light Co.	First 5½s	Feb. 1, 1953	89¼	90
Michigan Light Co.	First & Ref. 5s	Mar. 1, 1946	88	90
Milwaukee Gas Light Co.	First 4s	May 1, 1927	94	94½
Pacific Gas and Electric Co.	Gen. & Ref. 5s	Jan. 1, 1942	90¼	91
Pacific Gas and Electric Co.	First & Ref. 5½s	Dec. 1, 1952	96¾	97¾
Pacific Gas & Electric Co.	First & Ref. 6s	Dec. 1, 1941	102½	103½
Cal. Gas & Elec. Corp.	Unif. & Ref. 5s	Nov. 1, 1937	96	97½
Peoples' Gas Lt. & Coke Co.	Refunding 5s	Sep. 1, 1947	89½	90
Chicago Gas Lt. & Coke Co.	First 5s	July 1, 1937	94	96½
Portland Gas & Coke Co.	First & Ref. 5s	Jan. 1, 1940	89	91
Seattle Lighting Co.	Refunding 5s	Oct. 1, 1949	81	83
Southern California Gas Co.	First 6s	Nov. 1, 1950	97½	99
Utica Gas & Electric Co.	Ref. & Ext. 5s	July 1, 1957	89	91½
Washington Gas Light Co.	General 5s	Nov. 1, 1960	93¼	94¼
Washington Gas Light Co.	Mtge. 6s	Apr. 1, 1933	99¼	100
Western States Gas & Elec. Co. of California	First & Ref. 5s	June 1, 1941	87	90

Utility Bonds for Savings Banks

The purchase of public utility bonds as investments for savings banks, and the necessary changes in regulations governing the investments of the savings banks of New York State, were advocated by George S. Stevenson, treasurer of the Society of Savings, Hartford, Conn., chairman of the Committee on Public Utilities of the National Association of Mutual Savings Banks, in an address at the annual meeting of the National Association of Mutual Savings Banks.

"The public utility business, as we know it today, is still young," said Mr. Stevenson. "It has not had time to standardize itself. It is a splendid business. It is as fundamental to human needs as transportation. It is managed, very generally, by men of high integrity, commanding ability, and public spirit. The advances they are making in methods employed and results attained are measured almost by days. They deserve support. They are good custodians of capital. Can the savings banks, at the present stage, supply to them a part of what they need? If not, can the savings banks point out to

Colorado's Coal Production

During the month of May, the production of coal in Colorado was 732,473 tons, bringing the total for the first five months of 1923 up to 4,269,897 tons. This is an increase of 691,100 tons over the same period of 1922. Sixteen out of twenty coal producing counties show an increase.

P. S. Gas Stock Issue Is Voted Approval

Trenton, N. J.—The Public Service Gas Company was granted permission by the State Public Utilities Commission to issue an additional block of capital stock to the amount of $6,000,000. The proceeds of the stock, which will go to stockholders of record in the concern, will be used for extension to the company's plant.

At the hearing on the application, Frederick J. Wherry, appearing for the company, said that $4,000,000 of the proposed issue has already been expended and that the remaining $2,000,000 is provided for in the 1923 budget.

Of an authorized capital stock issue of $30,000,000, there has been issued $17,660,000 by the company

The estimated construction balance against which the proposed issue will apply totals $8,202,288.77.

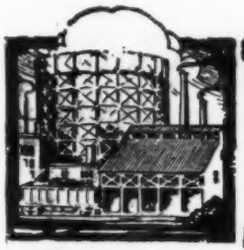
Gas Company to Increase Capital

Sandusky, Ohio.—The Sandusky Gas & Electric Company is planning an increase of capital stock from $1,500,000 to $3,000,000 by an issue of 15,000 shares of preferred stock in connection with projected extensions and improvements previously announced. The proposal will be submitted to the board of directors at a special meeting to be held at 10 a. m. August 10. The increase will care for the future demands of Sandusky for gas and electricity.

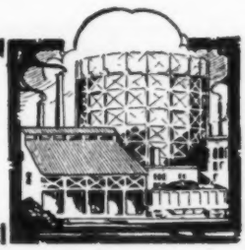
The company recently expended $50,000 at its plant on Lawrence street and is contemplating on further improvements.

New Installation

After giving the matter close study and investigation, the Richmond City Gas Works has placed an order with the U. G. I. Contracting Company of Philadelphia for the installation of thermo controls on the U. G. I. automatic control now operating the sets at their Richmond plant.



NEWS OF THE GAS INDUSTRY



Public Service Commission Approves New Rate Schedules

Albany, N. Y.—Under the recent amendment to the Public Service Commission Law of the State of New York, prohibiting gas companies from charging a service charge in addition to a commodity rate for gas, the Public Service Commission has approved new schedules submitted by many of the 25 corporations which have heretofore been collecting a service charge.

The schedules were filed under a general order of the commission, following the approval of the bill by the Governor on June 4 doing away with the service charge. Each schedule acted upon was approved subject to future examination and consideration by the commission.

The new schedules approved are as follows:

Albany Southern Railroad. Gas service supplied in cities of Hudson and Rensselaer, N. Y. Schedules filed to become effective June 2, 1923, under authority of order of the commission dated June 4, 1923, in Case No. 1361, eliminate the service charge heretoofre applicable to service in city of Hudson and establish the following rates (per 100 C. F.) for gas consumed: 0 to 300 C. F., $1; next 700 C. F., 16 cents; next 4,000 C. F., 15.5 cents; next 15,000 C. F., 14.5 cents; excess over 20,000 C. F. per month, 13.5 cents. Minimum charge, $1 per month. These rates are the same as the company has heretofore and is now charging for gas supplied in the city of Rensselaer. Rates heretofore applicable to service in city of Hudson consisted of service charge of 75 cents per month, regardless of quantity of gas consumed, plus straight line meter rates of $1.45 per M. C. F.

Chuctanunda Gas Light Co. Gas service supplied in city of Amsterdam, N. Y. Schedules filed to become effective July 7, 1923, under authority of order of the commission dated June 4, 1923, in Case No. 1361, eliminate the service charge of 50 cents per month for each meter installed, increase the rate for the first 2,000 C. F. of gas consumed per month from $1.30 per M. C. F., plus 50 cents service charge, to $1.80 per M. C. F. and establish the following graduated rates (per M. C. F.): Next 3,000 C. F., $1.30; next 5,000 C. F., $1.25; next 10,000 C. F., $1.20; over 20,000 C. F. per month, $1.10. Rates heretofore applicable consisted of service charge, 50 cents per month, plus consumption charge (per M. C. F.), viz.: First 5,000 C. F., $1.30; next 5,000 C. F., $1.25; next 10,000 C. F., $1.20; over 20,000 C. F., $1.10.

Empire Gas & Electric Company. Schedules filed to become effective June 4, 1923, under authority of the order of the commission dated June 4, 1923, in Case No. 1361, applicable to gas service throughout the territory served by the company, eliminate the service charge of 50 cents per month for each meter installed. In territory where rates formerly consisted of service charge 50 cents per month plus straight line rate of 15 cents per 100 C. F. for gas consumed, the new rates are: First 100 C. F. per month, 65 cents; over 100 C. F. per month, 15 cents per 100 C. F.; and in territory where rates formerly consisted of service charge of 50 cents per month plus straight line charge of 13 cents per 100 C. F. of gas consumed, new rates are: First 100 C. F., 63 cents; over 100 C. F. per month, 13 cents per 100 C. F.

Gas Light Company of Waverly. Gas service supplied in village of Waverly, N. Y. Schedule filed to become effective June 13, 1923, under authority of order of the commission dated June 4, 1923, in Case No. 1361, provides straight line rate of $1.95 per M. C. F. for gas for all purposes; minimum charge, 50 cents per month; discount for prompt payment, 15 cents per M. C. F. Rates heretofore in effect consisted of service charge 50 cents per month per customer plus rates (M. C. F.) for gas consumed, viz.: Less than 20,000 C. F., $1.65; 20,000 C. F. or more and less than 50,000 C. F., $1.55; 50,000 C. F. or more per month, $1.35; discount for prompt payment, 15 cents per M. C. F.

Long Beach Gas Co., Inc. Gas service supplied in city of Long Beach and town of Hempstead, N. Y. Schedules filed to become effective June 4, 1923, under authority of order of the commission dated June 4, 1923, in Case No. 1361, eliminate the former service charge of $1 per consumer per month and increase the rates for gas consumed as follows: Where rate was 19.5 cents per 100 C. F new rate is 22.5 cents per 100 C. F.; where rate was 15 cents per 100 C. F., new rate is 17.5 cents per 100 C. F.; where rate was 10 cents per 100 C. F., new rate is 12.5 cents per 100 C. F.

New York and Queens Gas Co. Gas service supplied in Third Ward of the Borough of Queens, City of New York. Schedule filed to become effective June 8, 1923, eliminates former service charge of 75 cents per month and charges block rates (per M. C. F.) for gas consumed as follows:

Monthly Consumption	Former Rate	New Rate
First 100,000 C. F....	$1.15	$1.38
Next 200,000 C. F....	1.10	1.33
Next 300,000 C. F....	1.05	1.28
Next 400,000 C. F....	1.00	1.23
Over 1,000,000 C. F..	.95	1.18

New York and Richmond Gas Co. Gas service supplied in First, Second, Third and Fourth Wards of the Borough of Richmond, City of New York. Schedule filed to become effective June 8, 1923,

eliminates former service charge of 75 cents per mnoth and changes block rates (per M. C. F.) for gas consumed as follows:

Monthly Consumption	Former Rate	New Rate
First 100,000 C. F....	$1.20	$1.45
Next 200,000 C. F....	1.15	1.40
Next 300,000 C. F....	1.10	1.35
Next 400,000 C. F....	1.05	1.30
Over 1,000,000 C. F..	1.00	1.25

North Westchester Lighting Co. Gas service supplied in villages of Briarcliff Manor, Ossining and Pleasantville and towns of Mount Pleasant and Ossining, N. Y. Schedule filed to become effective June 14, 1923, eliminates former service charge of 60 cents per month and changes block rates for gas consumed as follows:

Former rates (per M. C. F.): First 100,000 C. F., $1.60; next 200,000 C. F., $1.55; next 300,000 C. F., $1.50; next 400,000 C. F., $1.45; over 1,000,000 C. F., $1.40.

New rates: First 100 C. F., 75 cents; next 100,000 C. F., $1.60 M. C. F.; next 200,000 C. F., $1.55 M. C. F.; next 300,000 C. F., $1.50 M. C. F.; next 400,000 C. F., $1.45 M. C. F.; over 1,000,000 C. F., $1.40 M. C. F.

Owego Gas Light Co. Gas service supplied in village of Owego, N. Y. Schedule filed to become effective June 4, 1923, under authority of order of commission dated June 4, 1923, in Case No. 1361, eliminates former service charge of 50 cents per month and changes rate for gas consumed from 20 cents per 100 C. F. for first 15,000 C. F. and 16 cents per 100 C. F. for all excess consumption per month to the following: First 100 C. F., 70 cents; next 14,900 C. F., 20 cents per 100 C. F.; all over 15,000 C. F. per month, 16 cents per 100 C. F.

Peekskill Lighting & Railroad Co. Gas service supplied in village of Peekskill, N. Y. Schedule filed to become effective June 14, 1923, eliminates the former service charge of 60 cents per meter per month and changes rates for gas consumed as follows:

Former rates, monthly consumption: First 100,000 C. F., $1.50 per M. C. F.; next 200,000 C. F., $1.45 per M. C. F.; next 300,000 C. F., $1.40 per M. C. F.; next 400,000 C. F., $1.35 per M. C. F.; over 1,000,000 C. F., $1.30 per M. C. F.

New rates, monthly consumption: First 100 C. F., 75 cents; next 100,000 C. F., $1.50; next 200,000 C. F., $1.45; next 300,000 C. F., $1.40; next 400,000 C. F., $1.35; over 1,000,000 C. F., $1.30.

Syracuse Suburban Gas Co. Gas service supplied in villages of East Syracuse and Eastwood and town of Dewitt, N. Y. Schedule filed to become effective June 7, 1923, under authority of order of the commission dated June 4, 1923, in Case No. 1361, eliminates former service charge of 50 cents per consumer per month and establishes rates (per M. C. F.) as follows for gas consumed: First 50,000 C. F., $2.25; all over 50,000 C. F. per month, $2.17; minimum charge, 75 cents per month per meter. Prepayment meters will be set to deliver gas at rate of $2.25 per M. C F.; minimum charge, 75 cents per meter per month. Former rates consisted of a service charge of 50 cents per month per consumer plus rates (per M. C. F.) for gas consumed, viz.: First 50,000 C. F., $1.93; excess per month, $1.85. Prepayment meters set at $2 per M. C. F.; service charge, 50 cents per month.

Westchester Lighting Co. Gas service supplied in districts of Bronxville, Mount Vernon, New Rochelle, Port Chester, Tarrytown, White Plains and Yonkers. By schedules filed to become effective June 14, 1923, the former service charge of 60 cents per meter per month is eliminated and block rates as follows established for gas consumed. Rates except for the first 100 C. F. are per M. C. F.

In Mount Vernon and Yonkers districts: First 100 C. F., 72 cents; next 100,000 C. F., $1.20; next 200,000 C. F., $1.15; next 300,000 C. F., $1.10; next 400,000 C. F., $1.05; all over 1,000,000 C. F., $1. Former rates were: First 100,000 C. F., $1.20; next 200,000 C. F., $1.15; next 300,000 C. F., $1.10; next 400,000 C. F., $1.05; all over 1,000,000 C. F., $1; plus service charge of 60 cents per meter per month.

In New Rochelle District. First 100 C. F., 73 cents; next 100,000 C. F., $1.30; next 200,000 C. F., $1.25; next 300,000 C. F., $1.20; next 400,000 C. F., $1.15; all over 1,000,000 C. F. per meter per month, $1.10. Former rates were: First 100,000 C. F., $1.30; next 200,000 C. F., $1.25; next 300,000 C. F., $1.20; next 400,000 C. F., $1.15; all over 1,000,000 C. F. per meter per month, $1.10; plus service charge, 60 cents per meter per month.

In Bronxville, Port Chester, Tarrytown and White Plains districts: First 100 C. F., 74 cents; next 100,000 C. F., $1.45; next 200,000 C. F., $1.40; next 300,000 C. F., $1.35; next 400,000 C. F., $1.30; all over 1,000,100 C. F. per meter per month, $1.25. Former rates were: First 100,000 C. F., $1.45; next 200,000 C. F., $1.40; next 300,000 C. F., $1.35; next 400,000 C. F., $1.30; all over 1,000,000 C. F. per meter per month, $1.25; plus service charge of 60 cents per meter per month.

Incorporation Ruling

Albany, N. Y.—Joint application was made to the Public Service Commission on June 19 for authority to take into one corporation various gas and electric corporations operating in the western part of the state.

The New York Central Electric Corporation of Perry, N. Y., recently incorporated, proposes to take over the properties and franchises of the Perry (N. Y.) Electric Light Company, the Warsaw (N. Y.) Gas & Electric Company, the Hornell (N. Y.) Electric Company, the Dansville (N. Y.) Gas and Electric Company, The Yates Electric Light & Power Company of Penn Yan, and the Wayne Power Company of Sodus.

Authority is also asked by the New York Central Electric Corporation to issue $2,000,000 in first mortgage six per cent bonds, $1,000,000 in seven per cent cumulative non-voting preferred stock and $1,000,000 common stock. Proceeds to be realized from the sale of these securities are to be applied to the taking over of the assets of the six companies and carrying out of plans for extensions and improvements to the properties of the individual companies.

Coal Company Incorporated

The Riverside Coal Company has been incorporated, capitalization $25,000. The incorporators are George McMillin, Ed. McCorkle and John McDonald. Home office Denver, Colorado.

Appoints District Manager

Mr. C. H. Roessner has been appointed district sales manager for the Foxboro Co., Inc., manufacturers of high-grade recording and indicating instruments, Foxboro, Mass. He will have his central offices at 1510 Monadnock Building, Chicago, Ill.

Mr. A. F. Mundy, formerly of the Chicago office, will represent the company in Southern California, with offices at Pacific Finance Building, Los Angeles, Cal.

Boosting Gas Ranges

The Denver Gas and Electric Light Company, in conjunction with the Denver News and Times, a morning and afternoon newspaper, in the city of Denver, Colo., staged a five-day cooking and baking contest, in the large municipal auditorium, during early June.

The gas range used was a six-burner Reliable, valued at $300. It was the one used by each contestant in the baking of cakes and biscuits, and not only was it loaned by Clare N. Stannard, general manager of the Denver Gas Company, all gas used free, but it was given to the winner, Mrs. C. L. Draper, of Denver.

There is not a day passing but, in some manner, Mr. Stannard does not try to enthuse the populace of the fact that gas for cooking and heating is the best heat obtainable, and it is safe to predict that the contest just ended will be the means of many sales of gas ranges.

The "kitchen," of course, had to be provided with kitchen cabinets, the cabinet stocked with the needed articles for proper baking. These cabinets, two Napanee-Dutch kitchenettes, were loaned by G. H. Allen, the factory representative, and then given away as prizes.

The big gas range was the first prize, the others mentioned second, third, etc. The judges were ladies, residents of Denver, and after awarding the prizes resolutions were passed endorsing the newspapers mentioned for the excellent manner in which they conducted the affair.

Data on Public Utilities

From Wall Street Journal, June 13, 1923.

Buffalo, N. Y.—Recommendation that a service bureau be formed to give savings bank officers data on public utilities securities offered for sale was adopted by the National Association of Mutual Savings Banks. Committee on securities recommended that efforts be made to amend investment laws in New York and other states to permit savings banks to invest in public utilities securities.

H. M. Addinsell, of Harris, Forbes & Co., told the convention the present tendency is away from municipal ownership of utilities. He asserted 600 municipal plants have been abandoned and declared the attacks on utilities by political demagogues are rapidly losing their effectiveness because of the rapid increase in the number of citizens who are investing in securities of utilities companies. It was estimated that one family in each seven in the country now owns some type of utilities security.

Federal Court Upholds Revaluation Rights

Mobile, Ala.—Right of the Alabama Public Commission to revalue the property of a public utility for rate-making purposes was upheld in the Federal Court last week in a decision in connection with the Mobile Gas Company. The three federal judges rendering the decision held at the same time that the commission could not force the Mobile Gas Company to produce its books for a second examination. The decision has the effect of declaring the constitutionality of the Brower bill, passed by the last legislature, giving the utility board power to revalue a public utility when it deemed fit.

The opinion says in part:

"An application was recently made by the commission in the main suit for an order requiring the company to submit its records for examination by the commission, and in opinion upon that application it was stated incidentally that to permit a revaluation would be to authorize the commission to impair the obligation of a contract in violation of the federal constitution. However, upon further consideration of the public utility act, we are of the opinion that a contract between the State and the gas company did not result from the valuation of the company's property at its own expense.

Officers of Public Utilities Advertising Association Elected

The directors of the Public Utities Advertising Association have elected by mail vote the following officers for the ensuing year:

President——W. P. Strandborg, Portland Railway, Light & Power Co., Portland, Ore.

Vice-president—J. C. McQuiston, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.

Secretary—Charles W. Person, American Gas Association, 342 Madison Avenue, New York, N. Y.

Treasurer——B. J. Mullaney, Peoples Gas Light & Coke Co., 122 S. Michigan Avenue, Chicago, Ill.

Directors for the ensuing year are as follows:

To serve until 1924—H. M. Lytle, Illinois Committee on Public Utility Information, 125 S. Clark Street, Chicago, Ill; F. L. Blanchard, H. L. Doherty & Co., 60 Wall Street, New York, N. Y.; W. S. Vivian, Middle West Utilities Co., 72 W. Adams Street, Chicago, Ill.

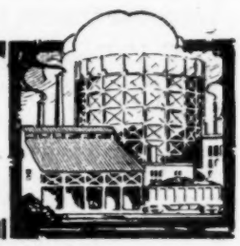
To serve until 1925—B. J. Mullaney, Peoples Gas Light & Coke Co., 122 S. Michigan Avenue, Chicago, Ill.; J. C. McQuiston, Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa.; W. P. Strandborg, Portland Railway, Light & Power Co., Portland, Ore.

To serve until 1926—Labert St. Clair, American Railway Association, 8 W. 40th Street, New York, N. Y.; Geo. F. Oxley, National Electric Light Association, 29 W. 39th Street, New York, N. Y.; Charles W. Person, American Gas Association, 342 Madison Avenue, New York, N. Y.

Personal

Frank H. Payne, manager Metric Metal Works of American Meter Company, Erie, Pa., was married June 16th to Mrs. Ellen M. Lowrey, of Erie, Pa. Mr. Payne is the son of Calvin N. Payne, formerly connected with the National Transit Co., Oil City, Pa. Mr. Payne first started manufacturing gas meters in Beaver Falls, Pa. The business was removed to Erie about thirty years ago. He first became known in the industry through the manufacture of the Tobey meter. Metric Metal Works does general meter manufacturing business, specializing in meters and other products for the natural gas trade, and is well known to many friends throughout the natural gas field and on the Pacific Coast.

With The Equipment & Appliance Manufacturers

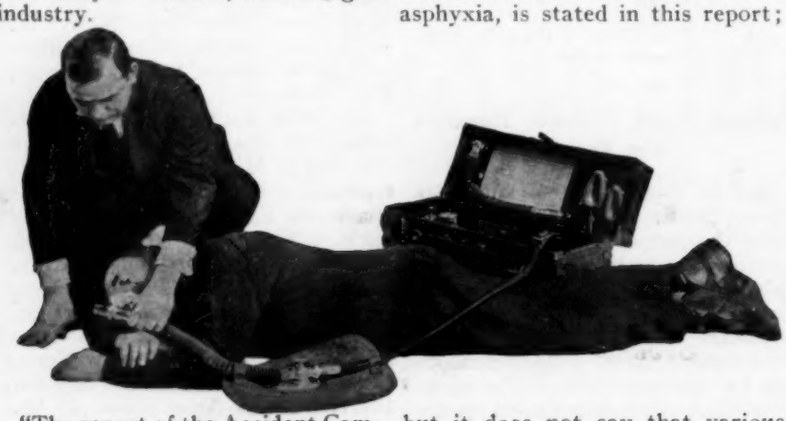


Conducted by Business Department of American Gas Journal

"Save a Life"

The Protecto Safety Appliance Company, Newark, N. J., recently issued a catalog entitled "Save a Life," containing much valuable information on resuscitation. It also describes their Industro Oxygenator, with illustrations showing how to use it. They state:

"We do not know of any industry that thinks of safety, practices safety and does more to advance the safety movement, than the gas industry.



"The report of the Accident Committee of the American Gas Association for 1922, emphasizes this in a very striking manner. The report of the Committee on Resuscitation from Carbon Monoxide Asphyxia is, in our opinion, one of the most far-reaching and vitally important contributions to the safety world in general, and to the gas industry in particular.

"Here was a subject that had remained more or less dormant for years. The causes and effects of gassing were known, but the methods for its treatment had not shown any advance in a generation. The after effects, ranging from grouchiness to pneumonia, were tolerated as a necessary risk attached to the job.

"The American Gas Association went at this subject in a broad, liberal and right way, by creating and financing what was known as the Commission on Resuscitation from Carbon Monoxide Asphyxia. It is the report of this Commission that stands out as an achievement of first magnitude. We do not propose to review this report, as you have probably read it, and, if not, you should read it.

"The discovery that oxygen 5% carbon dioxide, administered by inhalation, rapidly eliminates carbon monoxide from the blood, and thus terminates the condition of asphyxia, is stated in this report; but it does not say that various members of that commission actually risked their lives and health by allowing themselves to be gassed repeatedly, in order that they could confirm that finding, and yet such was the case.

"Having found the resuscitant, the next step was to determine what type of apparatus would be suitable for its administration, and this work was undertaken by a committee on apparatus, composed of members of the Committee on Resuscitation, of which Dr. Drinker was chairman.

"Only two devices were approved; they being the H. & H. Inhalator and the Industro Oxygenator, "Universal Model," made by the Protecto Safety Appliance Co., of Newark, N. J. Neither of these devices are in any sense mechanical breathing apparatuses, that is to say, they do not force air into, or draw air out of, the lungs, and it was found that devices that do this cannot be used safely with this new gas.

"The carbon dioxide in the oxygen causes deep breathing by stimulating the respiratory nerve center, causing a rapid ventilation of the lungs by natural methods. Any mechanical control on the respiration would react disadvantageously.

"The Industro Oxygenator provides for a continuous and uninterrupted flow of this gas to the patient, even while replacing cylinders, and by means of a second hose and mask, two patients can be treated simultaneously with one apparatus, if necessary. It also provides for the administration of either the oxygen 5% carbon dioxide or pure oxygen alternatively, if desired. It is equipped with a complement of surgical instruments to cope with any condition, and masks to fit men, women or children."

A copy of this catalog will be sent on request.

Salamac in Meter Factories

In our issue of June 16th, page 516, we inadvertently referred to Salamac as being used for "cleaning meters." Salamac is used in place of the ordinary sal ammoniac and is especially adapted for use in tinning, jointing, soldering, etc. In this process the Salamac performs the function of cleaning the soldering irons.

Our Salamac contains 98 to 99 per cent of ammonium chloride and because of its compact form in bars, which can be easily broken when required, there is a great saving in time, labor, stoppage of waste, etc.

The Salamac is offered to the trade by the North River Chemical Corporation, 90 West Street, New York. A free sample will be sent upon request.

No. 1842

Welsbach Semi-Indirect Fixtures possess many exclusive features. Numbered among these are the baffles designed to prevent discoloration of the ceiling and metal work. Special lacquers have been used to make permanent the many beautiful finishes in which these fixtures are furnished.

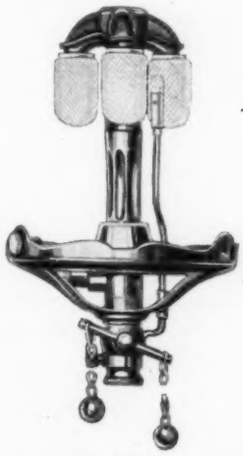
Meet Your Lighting Competition with These Two Powerful Weapons

The beauty, economy and practicability of modern gas lighting are expressed to their fullest degree in these two Welsbach Products. Our Semi-Indirect Lighting Fixtures and the "C. E-Z" Light will give you the means and the power to meet all lighting competition.

Gas users the country over recognize in the name WELSBACH the sign of gas lighting perfection. Your consumers will find in these two Welsbach Lights all those features that assure brilliance of illumination, correct distribution of light and greatest convenience.

Because of their adaptability and many exclusive features, Welsbach Semi-Indirect Fixtures and "C. E-Z" Lights lend themselves especially well to sales campaigns. Many thousands have been successfully sold on this basis.

Put volume and strength into your lighting business by giving your consumers the best there is. Let us tell you how we may co-operate in planning and pushing a sales campaign in your territory.



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WELSBACH COMPANY

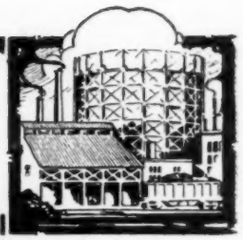
Gloucester, N. J.

Member American Gas Association

LIGHTING FIXTURES
GAS MANTLES GAS HEATERS

Welsbach **PRODUCTS**

With The Equipment & Appliance Manufacturers



Conducted by Business Department of American Gas Journal

New Uehling Folder

The Uehling Instrument Company, Paterson, N. J., has just issued a 12-page folder which explains concisely the two biggest losses in the steam power plant, namely (1) the loss in steam turbine economy due to air leakage into the condensing system and (2) the sensible heat in the flue gases lost up the chimney.

A table gives data on steam turbine economy as related to the absolute back pressure. The Uehling Combined Barometer and Vacuum Recorder, as illustrated in the folder, is in effect an automatic log of condenser performance because it records the existing vacuum as well as the back pressure for every second of the day. The chart is legible to less than 1-20 inch of mercury between the range of 0 to 6 pounds back pressure, thus detecting air leakage into the condenser, exhaust piping or turbine casing and showing whether or not the condenser is large enough to handle the load under any given conditions.

Data on combustion are given in another table, such as the variation of the chimney loss with the percentage of CO_2 and its relation to flame temperature and ratio of air to fuel supply.

The Uehling CO_2 Recorder and Indicator are illustrated and twelve different kinds of information which these instruments furnish are cited.

New "Lux Material" Booklet

The Alpha-Lux Co., 192 Front street, New York, have just issued a booklet entitled "Observations on Lux-Material." It covers the purification of gas from the early times when "Laming's Material" was used and was produced on the spot by each gas company. They state:

" 'Lux Material' was introduced to the gas industry more than 40 years ago. Though an artificial oxide, it is also an *alkalized hydrated ferric oxide*, and acts with its utmost vigor even at the first time of use, and retains this property to the last. Expressed in another way, it will act perfectly as a catch-box or as the first box in the series. This will be the more readily understood if its origin is explained.

"A French mineral, 'beauxite' (consisting almost entirely of alumina and ferric oxide) is mixed with soda and strongly heated. A chemical combination is thus brought about of both the alumina and the ferric oxide with soda. On treating the fused mass with water, the former compound passes into solution, while the ferric-oxide-soda is split up with absorption of water, and converted into sodium hydrate (which goes into solution), and hydrated ferric oxide, which is precipitated in the molecular state, *i. e.*, the condition of finest subdivision imaginable.

"On washing, a considerable quantity of sodium hydrate remains behind, by reason of its surface adhesion to the hydrated ferric oxide. It is in a state of such intimate and thorough admixture that a number of molecules of hydrated ferric oxide lie uniformly distributed about every molecule of soda. It may be assumed that in addition to the direct absorption of sulphuretted hydrogen by the hydrated ferric oxide, there occurs also an indirect absorption by the sodium hydrate, which then proceeds to give up sulphur to the hydrated ferric oxide. Moreover, an alkaline reaction is necessary if Fe_2S_3 is to be formed, and this is the sulphide most desired in purification, since it revivifies directly and completely to Fe_2O_3. This alkaline reaction is furnished by the sodium hydrate.

"Only in this manner can the quite exceptionally high absorptive capacity of 'Lux Material' be explained."

The booklet also contains many carefully worked out tables of costs on purification of interest to the operating head of the gas plant. A copy will be sent on request.

Change in Name

The Dodge Sales and Engineering Company, Mishawaka, Ind., which has for the past eight years been operating as the selling subsidiary of the Dodge Manufacturing Company and Dodge Steel Pulley Corporation, has now been consolidated with the parent company, Dodge Manufacturing Corporation, which was organized and began business last July.

The Dodge Manufacturing Corporation at that time took over the two long established manufacturing concerns, Dodge Manufacturing Company, organized in 1880, and Dodge Steel Pulley Corporation, organized in 1917 as the successor of the Oneida Steel Pulley Company, which began the manufacture of steel pulleys in 1900.

The distribution of Dodge products, which has heretofore been done under the name of the Dodge Sales and Engineering Company, will hereafter be conducted by the Sales Department of the Dodge Manufacturing Corporation, with Duncan J. Campbell, general sales manager, in charge, and John A. Beynon, assistant general sales manager.

List of Manufacturers of Refractory Brick

The Refractories Manufacturing Association, 840 Oliver Building, Pittsburgh, Pa., recently issued a booklet entitled "Brands of Fire Brick and Other Refractories." It lists the brands used by practically all of the manufacturers of refractory brick and is particularly useful to a man who knows the brand he wants to use, but who doesn't know who makes it. A copy will be sent gratis on receipt of written request.

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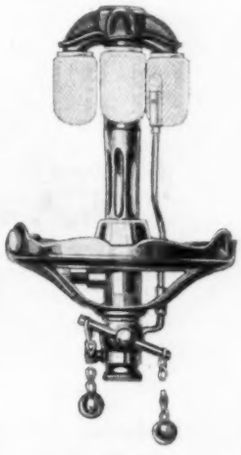

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Gloucester, N. J.

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LIGHTING FIXTURES
GAS MANTLES GAS HEATERS

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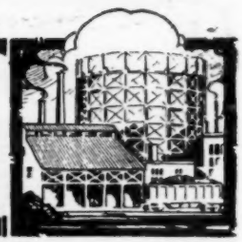


Conducted by Business Department of American Gas Journal

Isbell-Porter Co. Issue Bulletin on Gas Condensers

Isbell-Porter Co., Newark, N. J. have just issued Bulletin J, devoted entirely to "Gas Condensers." It contains chapters on Round Condensers with Steel Tubes, Rectangular Condensers with Steel Tubes and Rectangular Condensers with Cast-iron Tubes, Salt Water Type.

Sectional drawings of all types are shown as well as tables of dimensions and capacities, suitable for water gas service.

In a paragraph on coal gas they state:

"For Coal Gas service the final temperature desired is considerably lower than with Water Gas and more total surface per thousand cubic feet is required. Coal Gas requires primary cooling to about 100 degrees Fahr. prior to removing the tar, and secondary cooling to 60 degrees or 70 degrees Fahr. to facilitate the removal of Ammonia. The total surface in the Primary and Secondary Condensers should be about 50 per cent larger than required for Water Gas, and so distributed that about 1-3 of it comes in the Primary, and 2-3 in the Secondary Condenser."

A copy of this bulletin will be sent on request.

Consulting Materials Engineer Joins Dwight P. Robinson Staff

Mr. Cloyd M. Chapman has become affiliated with Dwight P. Robinson & Company, Inc., as Consulting Materials Engineer. Mr. Chapman, who has been active in the work of the American Society for Testing Materials and the American Concrete Institute, will in the future represent Dwight P. Robinson & Company in the committee work of these societies.

Geo. D. Roper Corporation Starts National Advertising Campaign

The Geo. D. Roper Corp., Rockford, Ill., have started a national advertising campaign on their line of gas ranges. They have selected twelve mediums of national circulation, in which their announcements will appear each month for the entire year. In addition they are sending out broadside printed in colors. This shows some reproductions of the advertisements to be run, and a short description of each of the national mediums to be used, reproduction of window cards in colors. A reproduction of one of the advertisements is shown. This campaign was started in January, and the Roper Corp., states that they are receiving a large number of inquiries as to where the Roper ranges can be seen or purchased in their respective localities. This indicates a wide interest throughout the country in the matter of "Cooking with Gas."

Lovekin Water Heater Co. Announce New Agency.

The Lovekin Water Heater Co., Philadelphia, Pa., have appointed the Shomer Co., Kirby Bldg., Cleveland, O., as exclusive Cleveland distributors of the Lovekin Automatic Gas Water Heater.

The Lovekin water heater was recently tested by the Good Housekeeping Institute, and a certificate of approval was issued December 31, 1922.

Announcement

The Standard Conveyor Company, St. Paul, Minn., announces that it has acquired by purchase all the rights, titles and patents pertaining to the "Brown Portable" line of portable and sectional piling, elevating, conveying, loading and unloading machinery for the handling of packed and loose materials.

This line of machinery has been manufactured by the Brown Portable Conveying Machinery Company at North Chicago for ten years. Until further notice the plant will be continued in operation by the Standard Conveyor Company, and all inquiries and correspondence regarding "Brown Portable" products should be addressed to Standard Conveyor Company, "Brown Portable" Products Plant, North Chicago, Ill.

Three New Styles of Welsbach Heaters

Leaders for Next Season's Business

The influence of Welsbach advertising plus dealer enthusiasm have resulted this year in an unprecedented sale of Welsbach Heaters. For next season three new styles will be ready to increase Welsbach Gas Heater popularity.

The Nos. 29 and 27, equipped with andirons, and the new No. 31 have been designed to enable you to offer Welsbach efficiency, economy and convenience in every required size and style of heater. The complete Welsbach line will enable you best to put across to your customers the Welsbach message of "comfort plus economy."

The No. 29 fireplace model, equipped with andirons. Finished in either oxidized brass or oxidized copper, its beautifully balanced, sturdy appearance will make this heater sell itself.

Here is the capable, business-like No. 27 equipped with andirons. It has grace and refinement—a handsome, appropriate model for any fireplace. Oxidized brass or oxidized copper finish gives color to its appearance.

Backed by our Vast Knowledge and Experience

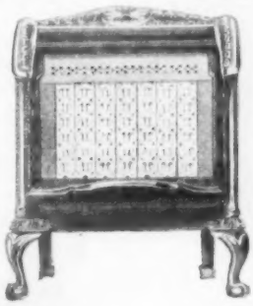
It is only natural that Welsbach Heaters should contain every feature that helps toward maximum heat production and greatest economy. To the special burner and glowers is due the unsurpassed volume of heat. A copper reflector prevents waste and sends all this warmth out into the room.

The high quality of the materials used, the splendid workmanship, the instantaneous, convenient, self-lighting service make Welsbach Heaters the final word in auxiliary heating perfection.

Serve Your Interests by Giving Your Customers the Best

Your customers look to you to tell them what is best. Serve your interests and theirs by giving them Welsbach Service.

Make next season the biggest heater year you ever had by planning now to get your share of Welsbach Gas Heater business.



No. 31

Our new seven-glower model. A heater chock full of energy and life. Compact size and light weight make it a heater of all-round usefulness, an ideal type for small room heating and emergency use.

WELSBACH COMPANY
Gloucester, N. J.

Member American Gas Association

LIGHTING FIXTURES
GAS MANTLES GAS HEATERS

Welsbach PRODUCTS

With The Equipment & Appliance Manufacturers

Conducted by Business Department of American Gas Journal

C. W. Hunt Co. Takes Over Manufacture of Mitchell Electric Vibrating Screen

Announcement has been made that the exclusive license to manufacture and sell the Mitchell Electric Vibrating Screen has been acquired by the C. W. Hunt Company, Inc., New York City, designers and manufacturers of material handling equipment. More than three hundred of these screens are in operation throughout the world in some of the most difficult wet and dry screening applications.

Pamphlet descriptive of the latest improved design will be forwarded on request to those interested.

New Welsbach Street Lighting Folder

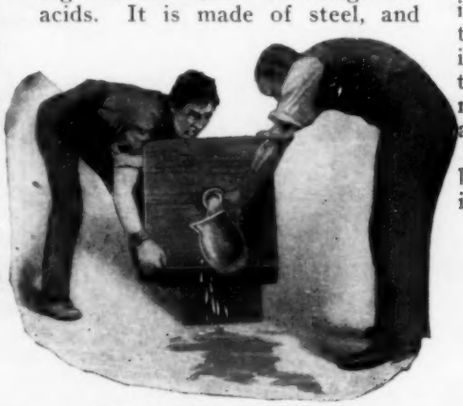
The Welsbach Street Lighting Co. of America, Philadelphia, Pa., recently issued a folder showing a few of the latest designs of street lamps which they manufacture, and which are in use in various cities. They state that "these lamps are equipped with the improved automatic device operating on either artificial or natural gas and give a beautiful white light; the illumination is well diffused and the artistic posts make the appearance of the avenues attractive by day as well as by night.

"The installation of gas street lighting units is simply a matter of connecting the lamp with the regular gas main in the streets. All services are under ground. Additions to the system can be made at will."

A copy of the folder will be sent on request.

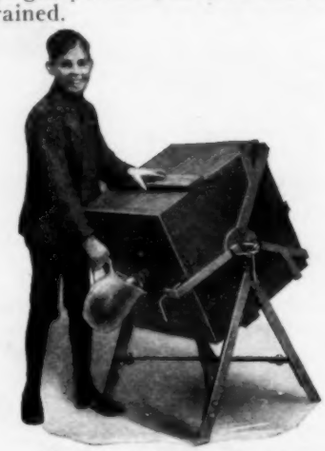
Safety Carboy Holder

The Safety Carboy Holder Co., 340 West 42nd Street, New York, recently placed on the market a safety carboy holder, designed for the purpose of avoiding the danger in handling carboys containing various kinds of dangerous acids. It is made of steel, and



No. 1. The old way.

is so balanced that after drawing the amount of liquid required the carboy revolves back to its natural position. There is a locking device so that it can be locked in an upright position, or inverted to be drained.

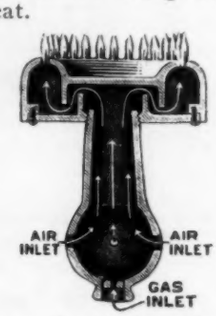


No. 2. The new way.

A New Style of Gas Burner

The Houghton Mnfg. Co., Chicago, Ill., recently issued a folder describing the Ho-Ton Superheating Gas Burner for manufactured and natural gas. These burners are used in hot water heaters, coffee urns, steam tables, etc. It it claimed that "the efficiency of this burner is due to a superheating mixing chamber which causes the gas to circulate in such a manner that a proper mixture of gas and air is obtained.

"No gas passes through the burner without being converted into heat.



"The sectional view shows how the gas enters the air chamber carrying the gas and air upward striking top cap, passing downward entering final compartment of the superheating mixture chamber giving a perfect green and violet flame with intense heat."

The Booklet also gives a table giving sizes of burner and prices. Copy of booklet sent on request.

New Installation

The U. G. I. Contracting Company has received contract for the installation of an 8 ft. Cone Top Carburetted Water Gas Apparatus to be installed at the plant of the Burlington (Iowa), Gas Light Company.

Three New Styles of Welsbach Heaters

Leaders for Next Season's Business

The influence of Welsbach advertising plus dealer enthusiasm have resulted this year in an unprecedented sale of Welsbach Heaters. For next season three new styles will be ready to increase Welsbach Gas Heater popularity.

The Nos. 29 and 27, equipped with andirons, and the new No. 31 have been designed to enable you to offer Welsbach efficiency, economy and convenience in every required size and style of heater. The complete Welsbach line will enable you best to put across to your customers the Welsbach message of "comfort plus economy."

The No. 29 fireplace model, equipped with andirons. Finished in either oxidized brass or oxidized copper, its beautifully balanced, sturdy appearance will make this heater sell itself.

Here is the capable, business-like No. 27 equipped with andirons. It has grace and refinement—a handsome, appropriate model for any fireplace. Oxidized brass or oxidized copper finish gives color to its appearance.

Backed by our Vast Knowledge and Experience

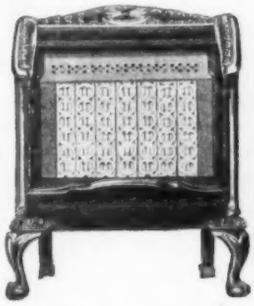
it is only natural that Welsbach Heaters should contain every feature that helps toward maximum heat production and greatest economy. To the special burner and glowers is due the unsurpassed volume of heat. A copper reflector prevents waste and sends all this warmth out into the room.

The high quality of the materials used, the splendid workmanship, the instantaneous, convenient, self-lighting service make Welsbach Heaters the final word in auxiliary heating perfection.

Serve Your Interests by Gi ving Your Customers the Best

Your customers look to you to tell them what is best. Serve your interests and theirs by giving them Welsbach Service.

Make next season the biggest heater year you ever had by planning now to get your share of Welsbach Gas Heater business.



No. 31

Our new seven-glower model. A heater chock full of energy and life. Compact size and light weight make it a heater of all-round usefulness, an ideal type for small room heating and emergency use.

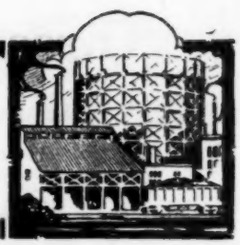
WELSBACH COMPANY
Gloucester, N. J.

Member American Gas Association

LIGHTING FIXTURES
GAS MANTLES GAS HEATERS

Welsbach **PRODUCTS**

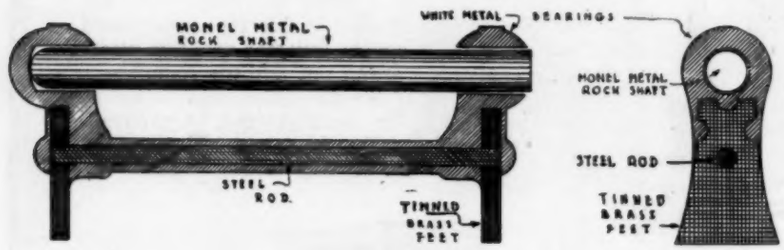
With The Equipment & Appliance Manufacturers



Conducted by Business Department of American Gas Journal

Lambert Meter Co.'s New Rock-Shaft Bracket

Lambert Meter Co., Brooklyn, N. Y., announces an improvement in the construction of its rock-shaft bracket, cut of which is shown herewith. By inserting brass feet, through which is passed a steel connecting rod and around the entire of which is cast the white metal bearings covering the brass feet and the steel rod, it has made the bracket virtually a one-piece job. Several advantages ensue from this construction, it is claimed.



CROSS-SECTION

The brass feet do not melt in soldering; the bracket is much stronger, and the bearings are in perfect alignment.

Added to this is the monel metal rock-shaft, which completes a unit that is non-corrodible, wear proof, strong and very practical.

New Device Prevents Losing Recording Button

An improvement has recently been made in the button which holds the chart on recording thermometers and gauges. Not only does this do away with the trouble of unscrewing and removing the button and then replacing it every time a new chart is to be put on the instrument, but it eliminates all possibility of losing the button.

On the recorders now being placed on the market by the Schaeffer & Budenberg Mfg. Co. and the American Steam Gauge & Valve Co., Division of Brooklyn, N. Y., there is a patented chart holder which cannot be removed.

A simple quarter turn draws in the little metal clips, or fingers, and permits chart to be removed. Another slight turn in the opposite direction pushes out the clips again and they grip the new chart firmly.

Announcement

The Combustion Engineering Corporation, Ltd., and the Uehling Instrument Company have recently entered into an agreement whereby Uehling interests in the Dominion of Canada and Newfoundland will be handled exclusively by the Combustion Engineering Corporation, Ltd., with principal offices located in Toronto, Montreal, Winnipeg and Vancouver. The Uehling line includes such fuel economy equipment as CO_2 recorders, SO_2 recorders, draft recorders, combined barometer and vacuum recorders, absolute pressure indicators, etc.

Trade-Marks—Trade-Names

Richards & Geier, patent and trade-mark attorneys, 277 Broadway, New York, have just issued the third edition of a 46-page booklet entitled "Trade-Marks and Trade-Names." It covers not only the subject of trade-marks in the United States, but also foreign countries. It gives complete and detailed information on this subject. A copy of the booklet will be sent on request.

Opens Chicago Office

In order to render more prompt and efficient service to Mid-West customers, the Pennsylvania Crusher Company has recently opened a new branch office in Chicago.

This office is in charge of Mr. C. S. Darling, a graduate of Worcester Polytechnic Institute, who served in France during the World War as captain of the 108th U. S. Engineers. Mr. Darling is well known to producers in the non-metallic industries as formerly editor of "Rock Products."

A new bulletin, No. 1005, has just been issued describing the Company's Coal Preparation Machinery, which will be of current interest to producers and to consulting engineers generally.

Temporary headquarters have been secured in the Monadnock Building, but after May 1 the permanent office will be located in the Illinois Merchants Bank Building, 230 South Clark Street.

ASSOCIATED GAS & ELECTRIC COMPANY
Statement of Earnings and Expenses

	1923	1922	Inc.	Dec.
MONTH OF MARCH				
Gross Earnings	$241,276	$141,221	$100,055	...
Operating Expenses and Taxes	163,729	94,020	69,709	...
Net Earnings	77,547	47,201	30,346	...
Less: Renewals and Contingencies Reserve	11,684	7,010	4,674	...
Gross Income	65,863	40,191	25,672	...
Fixed Charges	45,284	28,800	16,484	...
Net Income	20,579	11,391	9,188	...
TWELVE MONTHS ENDED MARCH 31st				
Gross Earnings	2,713,882	1,846,664	867,218	...
Operating Expenses and Taxes	1,803,708	1,281,869	521,839	...
Net Earnings	910,174	564,795	345,379	...
Less: Renewals and Contingencies Reserve	123,710	73,509	50,201	...
Gross Income	786,464	491,286	295,178	...
Fixed Charges	471,563	267,644	203,919	...
Net Income	314,901 ***	223,642 ***	91,259 ***	...
Earned on Preferred Stock (per share) (Required $3.50)	$11.04	$7.84	3.20	...

Albany Co. Enlarging Plant

The Municipal Gas Company, of Albany, N. Y., has awarded contract to The U. G. I. Contracting Company, Philadelphia, for the installation of additional apparatus consisting of U. G. I. Cone Top Carburetted Water Gas Apparatus, having a 3,500,000 cu. ft. capacity daily.

The apparatus will be of the U. G. I. up-to-the-minute design, and will be equipped with the U. G. I. Automatic Control.

The Albany company has also purchased one of the new U. G. I. Barring-Down Machines.

Broadcasting Information

The Iowa Committee on Public Utility Information has adopted a novel method of interesting the public in the work of assisting in solving problems, which the public must face, if adequate service is to be furnished. The director of the committee, Joe Carmichael, gave a fourteen-minute talk on the evening of April 30, from Radiophone Station W. O. C., Palmer School of Chiropractic, at Davenport, Ia.

W. O. C. is one of the strongest broadcasting stations in the country, and telegrams, 'phone calls and letters indicated that the talk was heard in distant parts of the country. Thousands of people listened in in the immediate vicinity of Davenport.

The speaker discussed briefly some of the difficulties confronting the electric light, gas and electric railway industries. He pointed out that the public was confronting the utilities with the biggest economic task that any industry ever faced In order to provide service which the public was demanding, the utilities had to double their investment in the next six or seven years. That investment now exceeds thirteen billions of dollars. It has been accumulating for half a century, yet it has to be duplicated in a few years.

The utilities, he claimed, did not know where the money was coming from, but they knew where it was not coming from. It was not coming from dissatisfied, disgruntled customers. It was not coming from anywhere if there was any appreciable number of disgruntled, dissatisfied customers, for no one was going to invest money in an industry whose public relations were bad.

To Install Water Gas Set

The Cambridge Gas Light Company of Cambridge, Mass., is now operating two ten-foot water gas sets and has placed contract with the Gas Machinery Company of Cleveland, O., for a new eleven-foot double superheater carburetted water gas apparatus to be installed alongside of the present equipment.

The new water gas set will be complete with automatic control, air and steam meters, brick overhead operating floor and other auxiliary equipment.

The contract also includes automatic controls and auxiliary hydaulic cylinders and equipment for the two old ten-foot water gas sets.

Doherty Fraternity Entertains Press Club

The Doherty Fraternity entertained the Denver Press Club at breakfast in the Metropole Hotel, Denver, Colo., Sunday, April 29. V. L. Board, president of the fraternity, and an official of the Denver Gas and Electric Light Company, was the guest of honor.

The event, while mostly in the nature of a "get-together-with-good-fellows," was also a wholesome jubilation over the fact that the Denver Press Club has acquired the long sought for transport, sailing in its own home.

Songs, speeches, reminiscences and "kidding" made gladsome the hours, while James C. Burger, old-time printer, but now president of the Hamilton National Bank, accepted the position of city editor of "The Breakfast Table." Under the able direction of the city editor, the plates were "scooped" clean, and everybody got an assignment.

Adds Scrubber Equipment

The Wisconsin Public Service Corporation has decided upon the installation of additional scrubber equipment at its plant in Cheboygan, Wisc. The contract for providing this equipment has been awarded to the U. G. I. Contracting Company of Philadelphia.

New Gas Commissioner for Holyoke, Mass.

Former City Engineer James H. Tighe has been appointed by Mayor John F. Cronin as a member of the Gas and Electric Commission, Holyoke, Mass., to succeed Arthur A. Marcil, resigned. Mr. Marcil sent his resignation to the Mayor on April 16, but it was not accepted until April 30, when Mr. Tighe was appointed.

The newly appointed Commissioner is one of the best known engineers in this section. He is a member of the leading engineering societies of America, Canada and Great Britain. He was for twenty years engineer for the Holyoke Water Department and twelve years city engineer. Since his retirement as city engineer he has been a consulting engineer.

Mayor Cronin, in accepting Mr Marcil's resignation, made the following statement: "I must say that the acceptance is made with regret, and I wish to express my gratitude to you for the assistance and effort you have devoted to the interest of the city."

Pawtucket Co. Improving Work

Stone & Webster, Inc., of Boston, is planning extensive improvements at the plant of the Pawtucket (R. I.) Gas Company, and to that end has awarded a contract to The U. G. I. Contracting Company of Philadelphia, who will install Cone Top Carburetted Water Gas Apparatus having capacity of 3,500,000 cu. ft. per day, together with U. G. I. Automatic Control.

Order Pressure Regulators

The Gas Machinery Company of Cleveland, O., has received contract for a 12-inch motor driven pressure regulator to be installed in the coal gas plant of the Salem Gas Light Company, Salem, Mass.

The Jacksonville Railway and Light Company, Jacksonville, Ill., also placed an order for an 8-inch Motor Driven Pressure Regulator with the Gas Machinery Company.

These regulators will maintain practically constant pressure conditions in the retorts and enable the gas company to obtain a maximum yield and uniform quality of gas as well as minimizing standpipe troubles.

Canadian Convention August 23 and 24

The annual convention of the Canadian Gas Association will be held in Ottawa, Ontario, August 23 and 24. Ernest A. Hills, acting secretary-treasurer of the association, has announced that the Chateau Laurier will provide accommodations for those who attend the sessions.

Water Gas Sets Being Shipped

Shipments are now being made of materials for the New Water Gas Sets for Shelbyville and Jeffersonville, Ind. These consist of a 5 ft. by 4 ft. by 4 ft. Water Gas Set, Blast Equipment, Coke Handling Equipment, Meters, Boosters Exhausters, Condensers, yard piping, and new buildings at each city. The Interstate Public Service Co. which operates these plants placed the contracts for the entire plants with the Western Gas Construction Company.

Personal Paragraphs

R. P. McLaughlin, formerly State Oil and Gas Supervisor in California, has opened offices in Los Angeles as consulting engineer and geologist. Mr. McLaughlin also has offices in San Francisco.

* * *

A. B. Collins has been appointed district sales manager of the securities department of Henry L. Doherty & Co., with offices in Bartlesville, Okla. Mr. Collins has been connected with the Empire interests for several years.

* * *

A. W. Crosby has resigned as manager of the production and drilling department of the Sinclair Oil & Gas Company in South Texas to enter business for himself. He has been succeeded by J. E. Hooper, who has been in charge of operations at Damon Mound.

Installing Additional Purifiers

The Fulton County Gas & Electric Company, at Gloversville, N. Y., is installing additional purifier equipment, and has awarded the contract to the U. G. I. Contracting Company for the work.

Joins Dwight P. Robinson & Co

Walter Goodenough has joined the staff of Dwight P. Robinson & Co., Inc., and will take part in the various activities of that company.

Add to Water Gas Equipment

The Galesburg Railway, Lighting & Power Company, Galesburg, Ill., have awarded contract to the Gas Machinery Company of Cleveland, O., for an eight-foot double superheater carburetted water gas apparatus to be installed in the new building that the gas company constructed a year or two ago.

This new water gas set will be located alongside of the present eight-foot Gas Machinery Company set and will be complete with overhead operating floor, hydraulic operation of valves and other auxiliary equipment.

British Inventor Produces Harmless Illuminating Gas

London.—Gas containing a negligible quantity of carbon monoxide and which is of no use to would-be suicides and harmless if it accidentally escapes from pipes has been produced by a Newark-on-Trent engineer after three years of research.

When substituted for the ordinary household gas in Newark mains it was found that no ill effects were suffered by persons who purposely or accidentally inhaled the new illuminant, while its heating and lighting properties were not impaired. The inventor declared it less costly than the old poisonous variety of gas and its general adoption throughout Great Britain is expected.

Putting heads in gas-flooded ovens has been a favorite means of suicide throughout England in recent months and to constantly increasing numbers who took their lives by the gas route by choice have been added an alarming number of accidental deaths due to faulty plumbing and stoves with no flues. The next most popular means of ending earthly sojourns has been taken by taking liquid poisons, but the Government, with the assistance of medical advisers, has been elaborating on the regulations making the purchase of poisons more difficult and requiring dispensers to color them in order to minimize the danger of being taken by mistake. Thus strychnine henceforth will be a brilliant green.

N. Y. State Utility Bills Passed at Final Session

Albany, N. Y.—Only the absolutely uncompromising attitude of the Democratic administration at Albany in respect to regulation of service and capitalization prevented the passage of a bill during the closing hours of the legislative session, which adjourned on May 4, giving to the City of New York home rule over the transit situation. The Assembly defeated almost the entire administration program by a party vote.

Working night and day the legislature before adiournment dumped over 700 bills into the executive chamber.

Five important amendments to the Public Service Commission Law were passed, however, and are now in the hands of the Governor.

These include the Walker Bill (Senate Print No. 1291), fixing the price of gas in New York City at $1 per 1,000 feet in the City of New York and prescribing a standard of 650 British thermal units per 100 cubic feet;

The O'Brien bill (Senate Print No. 1837), Amending section 65, Public Service Commission Law prohibiting gas corporations from charging for service, equipment or apparatus;

The Ryan bill (Senate print No. 2247), Amending subdivision 1, section 49, Public Service Commission Law, by providing that commission may fix maximum rate or charge for any common carrier, or street railroad, notwithstanding that a higher rate or charge has been heretofore authorized by general or special statute. Provision for temporary increase or decrease in rates is stricken out. There are other changes.

The Knight bill (Senate Print No. 2353), Amending various sections of the public service commission law relative to verification and filing of annual reports of corporations engaged in public service operations.

The Kaufmann bill (Assembly Print No. 1848), Adding a new section 53-a to the public service commission law requiring electrification of railroads in New York City.

The legislature also passed for the second time the Ferris amendment to section 7 of article 7 of the constitution, which authorizes the use of not to exceed 3 per centum of the lands of the forest preserve for the building of transmission lines and the erection of power and generating stations for electrical development of state owned water powers. This is perhaps the most important measure passed by the legislature in many years in relation to development of water power as without such amendment to the constitution any development of St. Lawrence power could not be carried across the Adirondack preserve. The amendment will go to the people for ratification at the general election in November.

An important amendment to the Transportation Corporations Law also was passed. This is the Swift bill (Senate Print No. 564), amending section 61 of the Transportation Corporations Law, by authorizing gas corporations furnishing natural gas to supply manufactured gas under their franchises in case supply of natural gas is inadequate.

The Governor has thirty days from May 4 in which to act upon these measures.

Investigation to Be Made Before Rate Settlement

Lawton, Okla.—No change in the gas rate in Lawton will be made by the corporation commission, until the state auditors and engineers have made an examination of conditions, according to a letter received by Mack Barker from Frank Carter, chairman of the commission.

The letter was in reply to a petition signed by forty Lawton citizens, protesting any increase.

The letter follows:

"Your petition received this morning. In reply beg to advise that before any change is made in the price of gas in Lawton, I intend to have my valuation men and auditors to take physical valuation of the property there and act accordingly.

"I want to say right now that the commission will deal out justice to all concerned. The Utility Company is entitled to a reasonable return upon their investment—so much and no more."

Gas Company Entertains

Los Angeles, Cal.—Several hundred guests were entertained at the Palais Royal recently by the Los Angeles Gas and Electric Corporation. Motion pictures of the manufacture of gas were given and the 100 Per Cent Club members enjoyed the affair, which proved of educational value to many who had little idea as to how the gas is produced and distributed.

Opens Local Office

Montebello, Cal.—The management of the Southern Counties Gas Company announces the opening of its new Montebello Gas office, located next door to The News office, on Tuesday, May 1. The company has remodeled the building and fitted it up in fine shape for the transaction of its business in this city.

In the past the local gas consumers were required to transact all business at Whittier. The opening of the Montebello gas office, however, will eliminate this feature and enable all local consumers to deal directly with the Southern Counties Gas Company at its Montebello office.

Carpenters have been occupied for the past three weeks getting the office into shape for next Tuesday's opening. Ample space has been set aside in the office for displaying gas appliances handled by the company. These include standard gas ranges, gas water heaters and gas space heaters. The company will maintain here at all times a complete display of up-to-date gas burning appliances.

Wants Rate Hearing

Boston, Mass.—Dissatisfied with the new scale of gas rates, certain residents of Malden, Melrose, Everett, Medford, Stoneham, Reading, Revere and Winthrop have petitioned the Public Utilities Commission, and, it is believed, will be given a hearing at the State House. The new rates, effective May 11, were the result of a compromise between the Malden & Melrose Gas & Electric Company, the Malden Electric Company and the Suburban Gas and Electric Company on one hand, and, on the other, the city solicitors and town councils of the communities affected. The compromise abolished the service charge of 35 cents a month for each meter, and reverted to the rates in force before the institution of that charge a year ago.

Chester Gas Co. Meeting

Chester, Pa.—A meeting of the stockholders of the Chester Gas Company was held May 3 at the Delaware County National Bank. The following directors were elected to serve for the ensuing year: J. Howard Roop, Clarence Deshong, John P. Crozer, Orlando H. Cloud and E. B. Johnson.

Later the directors met and elected J. H. Roop president and treasurer; E. B. Johnson, secretary. There was no further business transacted.

Tells of Utilities Work

Gloversville, N. Y.—Charles W. Bennett, vice-president of the Birmingham Gas Works outlined relations that should exist between the public and public utilities companies at the weekly meeting of the Kiwanis Club at the Hotel Kingsborough. During his address Mr. Bennett stated that utilities do business honestly and honorably and that they desire to cooperate with the public at large. He added that they are not constantly "trying to slip something over," but that they are ever seeking the good will and trade of the general public.

Mr. Bennett stated that the utilities are not making huge profits and seeking to raise rates in order to increase gains. He added that the Public Service Commission permits these utilities to have an income which pays their operating expenses and enough to permit a fair return on the capital actually invested, but that this income is carefully scrutinized. He spoke on gas and electrical industries at considerabel length and also discussed last winter's fuel shortage.

Louisville Co. to Start Construction of New Plant

Louisville, Ky. — Permission granted May 4 by the County Court to the Louisville Gas & Electric Company to cross the River road between Beargrass Creek and the Water Works with a switch, revealed that contracts amounting to $2,500,000 have been let for the company's new artificial gas plant to be built on the site recently acquired on the River road.

Work is to begin at once on the gas holders, compressors, generators and boilers that are to furnish Louisville with artificial gas.

The plant will supply 12,000,000 cubic feet of gas a day.

The plant will be completed early in the winter at the latest, and may be in readiness by November 15.

Coincident with the beginning of building operations is the purchase of an additional tract of land just east of the Louisville Rendering Company. This contains fifty-five acres and gives the Louisville Gas and Electric Company about ninety-five acres in all. This, it is believed, will be ample for all future needs, and looks to Louisville's growth for fifty years.

The company land lies north of the River road, and extends to the river. On the east it adjoins the property of the Louisville Water Company. When the railroad switch is completed it can get supplies by both rail and water.

Under the terms of the permit from the Fiscal Court, the crossing will be built of vitrified brick and the responsibility of maintaining it in good order falls on the company. The line connects with the water front branch of the L. & N. and supplies for the building operations will be hauled over it. as well as coal in the future for the gas plant.

The construction of the River road plant means the ultimate abandonment of the artificial plants at Jackson and Washington which have grown too small. They will probably be operated again this winter, as the company will not let them go before the new plant is in full blast.

Although it is hoped to finish the $2,500,000 plant by November 15 the demand for steel and labor makes a later completion date more likely.

Demand for Automatic Controls

We constantly hear of additional installations of U. G. I. Automatic Controls in plants throughout the country. The latest reports reaching this office are that the U. G. I Contracting Company is installing one Automatic Control at the Flint Mich., plant of the Michigan Light Company and three Automatic Controls at the plant of the Des Moines (Iowa) Gas Company.

Adding Hydraulic Operating Equipment

As an additional improvement to its plant, the Wilmington (Del.) Gas Company is adding a hydraulic operating equipment to its water gas apparatus, and has awarded the contract for supplying same to the U. G. I. Contracting Company, Philadelphia.

Installing Additional Water Gas Apparatus

The Luzerne County Gas and Electric Company contemplates extensions and improvement to its plant at Hazleton, Pa., and to that end has awarded to the U. G. I. Contracting Company of Philadelphia a contract for the installation of additional carburetted water gas apparatus, which will give the plant an added daily manufacturing capacity of over 1,000,000 cubic feet.

Toronto Co. Chorus Wins Honors.

About three months ago the employees of the Consumers' Gas Company of Toronto decided on the formation of a male chorus. The superintendent of the stock department, J. T. B. Redfearne, was appointed conductor, and the choir went into harness for the musical festival which was held in the large Massey Hall, Toronto. The choir was successful in gaining the Challenge Shield for Commercial Male Chorus.

In giving his judgment of this section, Plunket Greene described their rhythm as "topping," the tone and blend "beautiful," and the entire offering, "exhilarating." For their outstanding performance the chorus was asked to repeat their showing in the final concert given in the same hall, and a quotation from one of the local daily papers reads:

"The Consumers' Gas Male Chorus made an excellent showing in regard to tonal shading in Adam's 'Comrades' Song of Hope,' the composition abounding in subtle effects."

The choir work is now finished for the season, but both conductor and rank and file are looking forward to a successful defense of the shield at a future festival.

Three New Styles of Welsbach Heaters

Leaders for Next Season's Business

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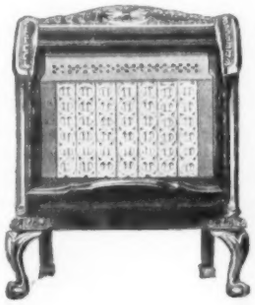
it is only natural that Welsbach Heaters should contain every feature that helps toward maximum heat production and greatest economy. To the special burner and glowers is due the unsurpassed volume of heat. A copper reflector prevents waste and sends all this warmth out into the room.

The high quality of the materials used, the splendid workmanship, the instantaneous, convenient, self-lighting service make Welsbach Heaters the final word in auxiliary heating perfection.

Serve Your Interests by Giving Your Customers the Best

Your customers look to you to tell them what is best. Serve your interests and theirs by giving them Welsbach Service.

Make next season the biggest heater year you ever had by planning now to get your share of Welsbach Gas Heater business.



No. 31

Our new seven-glower model. A heater chock full of energy and life. Compact size and light weight make it a heater of all-round usefulness, an ideal type for small room heating and emergency use.

WELSBACH COMPANY
Gloucester, N. J.

Member American Gas Association

LIGHTING FIXTURES
GAS MANTLES GAS HEATERS

Welsbach PRODUCTS

With The Equipment & Appliance Manufacturers

Conducted by Business Department of American Gas Journal

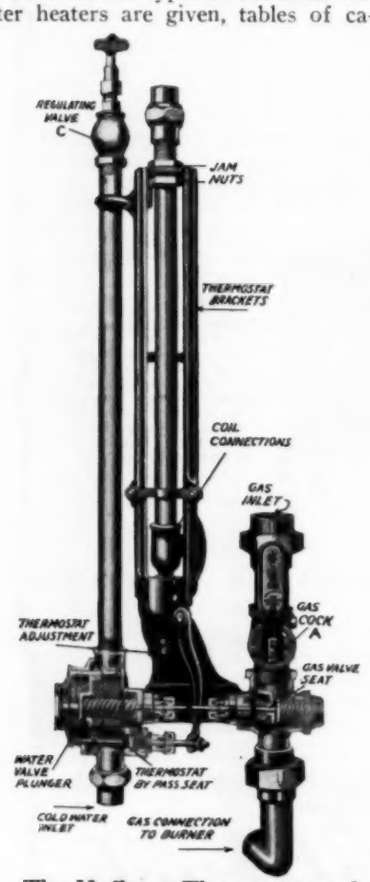
New Hoffman Heater Catalog

The Hoffman Heater Co., Lorain, O., has just issued a catalog which they call "The Hoffman book for architects and others who are interested in technical and general data concerning the installation of gas fired water heaters and systems."

In addition to much valuable data on the subject of hot water service and systems, complete specifications of the various types of Hoffman water heaters are given, tables of capacities, estimated hot water requirements for various fixtures, capacities of pipes, etc.

The whole line of Hoffman heaters are shown and also sectional views in blue print form with complete dimensions.

To assist the commercial manager and architects, blue prints are shown of almost every kind of an installation that might be required, from the small cottage to the mansion, for either the instantaneous automatic water heaters, automatic thermostatic and pressure valve water heaters, automatic multicoil storage systems, automatic domestic storage system, tank water heaters and the Hoffman re-heating system. The catalog contains 56 pages, strongly bound, and will be sent to anyone on request.

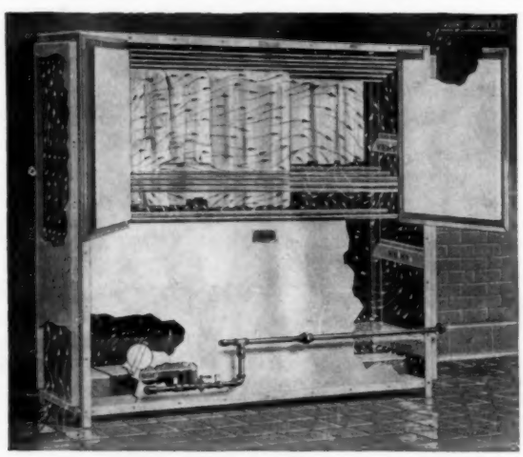


The Hoffman Thermostat and Valve Unit Complete

Chicago Clothes Dryers

The accompanying cut shows a sectional view of the Chicago Clothes Dryer, described in Bulletin No. 21, issued by the Chicago Dryer Co., 2210 N. Crawford Avenue, Chicago, Ill. These dryers are adapted for use in residences, apartment houses, schools, colleges, sanitariums and clubs.

It is equipped with the Chicago-Francis patented indirect gas heating system. The burner is placed in an interior drum and no fumes or odors can come in contact with the clothes. A continuous circulation of air is maintained in the cabinet at all times. The arrows in the illustration show the air circulating system. The dryer shown measures 6 ft. high, 6 ft. 8 in. wide and 1 ft. 8½ in. deep. Contains 13 hanging bars, each 6 ft. 6 in. long, having a hanging capacity of 85 lineal feet. Hanging bars are ventilated so as to prevent overheating or injury to the most delicate fabric.



A copy of bulletin will be sent on request.

Moves New York Office

The Bartlett-Hayward Company of Baltimore, Md., announces the removal of its New York office to 1607 Pershing Square Bldg., 42nd Street at Park Avenue.

New $1 Gas Rate Will Be Litigated

Under the above heading, the "Wall Street Journal" on May 7 had the following to say:

"Next step in progress of the bill providing a $1 gas rate for New York City passed by the Legislature will undoubtedly be holding of hearings by Governor Smith, at which time the gas companies will present argument against proposed law and in favor of its veto.

"Should the bill finally become law it will be immediately attacked in the courts on the basis of being inequitable and confiscatory. It is entirely unlikely that the new law will go into effect, assuming it is signed by Governor Smith, until after the U. S. Supreme Court has passed upon its merits.

"Present rates were fixed by Public Service Commission on October 1, 1922, on 'bloc rate' system, starting at $1.15 and reducing in price to 95 cents, larger consumers getting lower rates. The $1.15 rate applies to consumption of 100,000 cubic feet or less a month and approximately 95 per cent of all gas sold is around $1.14 a thousand feet.

"These rates followed a voluntary reduction of 25 cents a thousand feet made by the companies themselves from the rate of $1.50 put into effect by the companies following unanimous decision of U. S. Supreme Court that the old Eighty Cent Gas law was confiscatory.

"Passage of the $1 gas law in Albany was made without any public hearings or apparent study of conditions and investments involved. It is a fact that there has been little if any change from the basis of gas making costs which existed during the litigation of the old 80-cent rate. Companies today are paying more for labor, material and equipment. Coal is higher in price. Gas oil, largest item of cost in manufacturing gas, is still 5.6 cents a gallon whereas its normal price in pre-war times was 3 to 3 1-3 cents a gallon.

"Attack by the companies on the new gas law will be that it is inequitable. That the companies feel their position a strong one is indicated by remarks made by George B. Cortelyou, president of Consolidated Gas, to the effect that: 'At no period in its history has this company been in a better position to maintain the rights and interests of its many investors against assault from any quarter.'

"This referred not alone to the decision of the U. S. Supreme Court but also to the findings of the Public Service Commission last October. These latter were made after nearly a year of investigation, which is in striking contrast with manner in which legislators arrived at their $1 rate, of costs investments and all other elements.

"One of the most important points in this decision was the findings by the commission of the amount of money invested in gas properties by the Consolidated Gas Co. and the commission's frank admission that the company is entitled to such rates as will yield a return on at least the actual sums invested.

"Commission found that Consolidated Gas and its gas subsidiaries had an actual investment in gas properties of $154,825,012, not including properties in Queens and Bronx."

To Consult Over Gas Supply

Akron, Ohio.—C. F. Gallagher, of Cleveland, vice president of the East Ohio Gas Co., will meet with members of the City Council Utilities Committee to take up the matter of Akron's future gas supply.

Chairman E. L. Marting, of the committee, said that he will take up the matter of furnishing artificial gas to Akron consumers in event the supply of natural gas becomes exhausted and also the furnishing of gas to people living in sections recently annexed by the city.

L. B. Terry, local manager of the company, estimated that the present supply of natural gas will be exhausted in five years, if the company does not secure a new source of supply. The gas company's franchise in Akron will run for five more years.

Gas Ordinances to Be Considered

Geneva, Ohio.—When City Council meets, the uniform gas ordinance as drawn up by F. B. Dunn, president of the North Eastern Oil & Gas Co., and Manager Stone of the Ashtabula Gas Co., probably will be presented to the legislative body for its consideration.

The Ashtabula City Council passed the ordinance with revisions by a vote of four to three. This ordinance provided for a 50 cent a month service charge and $1 per thousand cubic feet charge for gas.

An amendment to one of the sections of the ordinance will prevent the company from purchasing gas from the Diamond Alkali Co., Fairport, which has been one of the deals considered. It also prevents the company from proceeding with a natural gas supply, if it is to enjoy the benefits of the new ordinance.

In accepting this ordinance the council accepted the plan for the proposed artificial gas plant which it is planned will furnish gas to Ashtabula, Jefferson, Conneaut and Geneva.

New Gas Rates in Effect

Boston, Mass.—In accordance with an agreement reached at a recent hearing, the State Department of Public Utilities issued an order putting into effect a new scale of rates involving the abolition of the service charge for gas and electricity in Malden Melrose, Everett, Medford, Stoneham, Reading, Revere and Winthrop.

Following is a summary of the new rates, effective May 1; the rate put into effect a year ago in connection with the service charge, and the rates in effect prior to the change a year ago:

Malden and Melrose Gas Co.—May 1, 1923. Gas rates. Regular meters. First 1400 cubic feet per month, 15 cents net per 100 cubic feet. All over 1400 cubic feet per month, 12½ cents net per 100 cubic feet. Minimum charge, 10-light meter or less, 50 cents per month; 20-light meter, 70 cents, and graduated charges increasing with the size of the meter up to $5.75 per month for 300-light meters.

Prepayment meters. Net monthly minimum charge, 50 cents per meter. For all gas consumed, 15 cents net per 100 cubic feet.

Rates, May 15, 1922. Gas service charge, 10-light meter or less, 35 cents per month. In addition, commodity charge of 12½ cents net per 100 cubic feet per month.

Rates, May 14, 1920. Flate rate of 15 cents per 100 cubic feet per month up to 35,000 feet.

Boston, Mass.—Department of Public Utilities has approved contract whereby Boston Consolidated Gas Co. will purchase gas from New England Fuel & Transportation Co. at 45 cents per 1000 cubic feet, for a period of one year, beginning May 1, 1923.

Gas Co. Will Build $35,000 Addition

Madison, Wis.—An addition to the boiler house of the Madison Gas and Electric Company on East Main Street will be erected at a cost of $35,000, according to a permit issued by Building Commissioner G. H. Mason.

The contract has been awarded to John H. Findorff and Son. Brick, steel and concrete will be used in the construction of the building.

Dewey Gas Plant Changes Hands

It was announced by H. H. Faulkner, general manager of the Union Public Service Co. of Kansas City, that the company, which now owns all of the properties formerly owned by the Loomis interests, and which is now owned by Phillip Frances, of Los Angeles and Mr. Faulkner, has purchased the Dewey Gas Co.

The new owners took over the property from J. L. Vaughn, of Dewey, and it will be operated as a subsidiary company of the Union Public Service Co., the same as the Nowata County Gas Co. The first act of the new owners was to withdraw the application for increased rates which the Dewey Gas Co. had filed with the Corporation Commission.

Mr. Faulkner stated that he hoped that by increasing the efficiency of the Nowata plant in the matter of decreasing leakage, that it would not be necessary to ask for an increased rate until a date far in the future. On the other hand, should the saving of gas by the stoppage of leakage be sufficient, Mr. Faulkner stated that it would be the policy of his company to reduce the rates to the domestic consumers. That the Union Public Service Co. means business in this matter is evidenced by the fact that all applications for rate increases in Kansas and Oklahoma have been withdrawn.

Mr. Faulkner also stated that the company has placed an order for 15,000 new gas meters and that as soon as they can be delivered all of the old meters will be taken out and new ones installed.

To Retire from Gas Co.

Elmira, N. Y.—Daniel H. Harrington, superintendent of the gas department of the Elmira Water, Light and Railroad Company, will retire from the company on June 1, according to announcement made recently. Mr. Harrington became associated with the gas department June 1, 1896. Therefore, he will have completed 27 years in the service when he retires. General Manager Hill was reluctant to accept the resignation of the superintendent and paid Mr. Harrington a fine compliment in accepting his letter of retirement. He has not announced his future plans.

Contract Awarded

The U. G. I. Contracting Company, of Philadelphia, has lately received contract from Syracuse (N. Y.) Lighting Company, which will include the erection of a 2300-volt, 60-cycle switch house, together with cable volts, switchboard, reactance circuit-breakers, etc. Included in the contract is the furnishing and erecting of a 2300-volt, 60-cycle generator bus extension, also additions to the switching equipment for synchronous condenser.

Increase Storage Capacity

Houston, Texas.—Capacity of the Houston Gas and Fuel Company will be increased 50 per cent with the building of a 20,000,000-foot tank at San Felipe Road and West Clay Street, it was announced. The company at present is equipped to store about 4,000,000 feet of gas.

F. B. Murphy, general manager of the company, said that the property was purchased several weeks ago, but that it was not definitely decided at that time how big to make the tank. About an acre is taken up by the storage reservoir.

The proposed tank will serve to give the entire South End a steady supply of gas from a new 15-20-inch system of distribution pipes. The pipes will be laid in a few weeks, Mr. Murphy said.

The most expensive part of the project is laying of a new 16-in. pipe from the gas plant across the city to the new reserve supply tank, Mr. Murphy said, and erection of the tank itself. The distribution pipe system at present is fairly complete.

Later, it is planned to continue the system to serve Houston Heights and the outlying districts now being built up.

At present the gas company pumps an average of 3,500,000 feet of gas into the mains daily. As high as 7,500,000 feet have been consumed in a day, Mr. Murphy said.

There is one large storage tank which when full holds 3,000,000 feet of gas, Mr. Murphy said, at the plant. This tank is 176 feet high. The new tank to be built will look nearly as large, but in reality will be but half the capacity of the one now in use. The old equipment also will continue in use, he added.

Cost of the projects was not given out, although Mr. Murphy said that the tank alone will cost about $175,000.

Seeks to Change Discount Plan

Atlanta, Ga.—The Savannah Gas Company has filed with the Georgia Public Service Commission a petition to discontinue present practice of allowing discount of bills, paid on or before the tenth day of the month, and to permit the presentation of bills to customers immediately following the reading of the meters, and allow discount on such bills if paid within 10 days after date of presentation.

Honor Clerk 50 Years With Company

New York, N. Y.—Edward R. Du Cret, contract clerk of the Metropolitan Branch of the Brooklyn Union Gas Company, will be guest of honor May 19 at a dinner given at the branch office, Fifth Avenue and Eighth Street, in celebration of his service of half a century in the employ of the company and its predecessors.

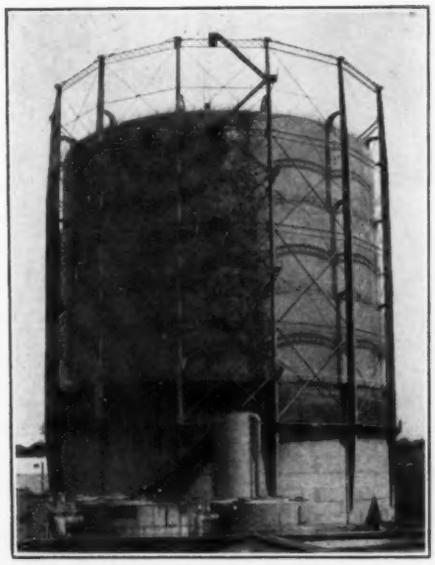
Mr. Du Cret started with the old Citizens' Gas Light Company at No. 130 Atlantic Avenue as an office boy May 19, 1873. When that company merged with the Brooklyn Union Gas Company he became a bookkeeper and afterward a contract clerk at the old offices at Fifth Avenue and Fifth Street. He moved to the present office with the others in 1901, since which time he has seen many changes in the personnel.

New Booster Plant for Brooklyn

In addition to the other contracts that it has awarded to the U. G. I. Contracting Company, of Philadelphia, the Kings County Lighting Company, of Brooklyn, N. Y., has authorized the former company to install a complete Booster plant at 65th Street and 9th Avenue, Brooklyn.

This plant will consist of two 200-horsepower oil fired boilers and two engine driven Boosters, each having a capacity of 300,000 cu. ft. per hour, and appropriate surface condensers and other auxiliary equipment. The boilers and other machinery will be properly housed in buildings that will be erected as part of the contract.

THE STACEY MANUFACTURING Co



2,000,000 cu. ft. cap. four lift Holder with Purifiers and Scrubber in foreground.

ENGINEERS, FABRICATORS & ERECTORS
of a general line of
PLATE and STRUCTURAL METAL WORK

Builders of more than a thousand

Gas Holders

2—30′ 0″ diam. by 50′ 0″ Tanks with elevators, and stacks in background.

WASHING, CONDENSING *and* PURIFYING APPARATUS
BENCH IRON WORK—VALVES

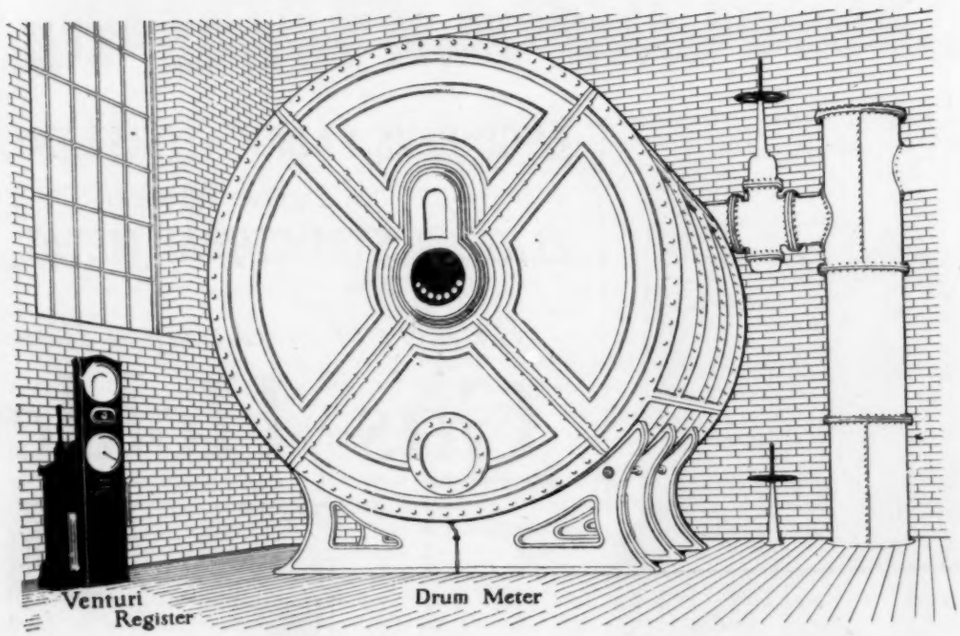
J. Frank Stacey, Pres. & Gen. Mgr.
Thos. C. Ranshak, Vice Pres.
Wm. F. Dunker, Secy. & Treas.
Geo. H. Cressler, Gen. Sales Mgr.

Our Engineers are at Your Service in planning the equipment that our seventy years of practical experience recommends for your need.

Cincinnati, O.

Eastern Office: R. H. Trimble, Sales Engr., 140 Nassau St., New York City

The VENTURI Station Meter



Does a Giant's Work

A Venturi Station Meter Register seems a pygmy beside a drum type meter. Its base dimensions are 3 ft. x 2 ft., the height is 6 ft.; a building 6 ft. square will house it. The Venturi Register is the same size for ALL capacities. Two ¾" pipes connect the Register to the Venturi Meter Tube located in the gas main. In one installation we have in mind, a single Venturi Gas Meter does the work of EIGHT drum type meters and with less pressure loss.

1. Accuracy of measurement.
2. Ruggedness and simplicity of design.
3. Dials giving not only total volume but also indicating and recording rate of flow.
4. Small friction loss.
5. "Self-prover" attachment.
6. The Register occupies less space than an office desk.
7. Requires no special foundations.
8. Low first cost.
9. Low installation cost.
10. Negligible maintenance cost.

The Venturi is adapted for measurement of gases of all kinds, steam, water, sewage, air, oil and other liquids.

Shall we send you Engineering Bulletins which give details?

BUILDERS IRON FOUNDRY

"Builders of the Venturi"

Providence **Rhode Island**

New York	Kansas City	Chicago	San Francisco	Portland, Ore.	Toronto
Philadelphia	Pittsburgh	Atlanta	Los Angeles	Dallas	Ottawa

HUNT

COAL AND COKE-HANDLING EQUIPMENT

The Hunt pivoted bucket conveyor carries bulk material, dry or liquid, noiselessly in any direction without shock, breakage or violence. Three types of conveyors are manufactured: "Standard," with independent buckets, being separately filled; "Continuous," with edges of bucket in contact; "Lip Type," with edges of bucket overlapping—material being spouted into conveyor in constant stream without spill or scatter.

Buckets are suspended on pivots so that gravity keeps them upright, whether track be horizontal, vertical or inclined. Conveyor driven by pawls which run smoothly on driving pins on chains. Whole conveyor designed for thorough lubrication of all bearings.

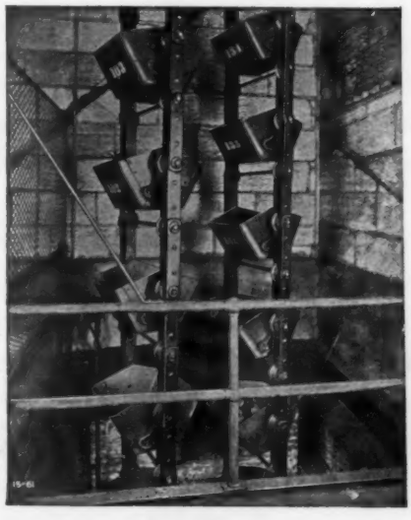
Capacity secured not by speed, but by enlarged bucket. Operation entirely automatic. All parts interchangeable. Conveyor will operate on 5 to 10-H. P.

Special automatc machinery is designed for filling each "Standard" type bucket with definite quantity of material. Several fillers can be arranged for measuring and mixing different materials.

C.W.HUNT CO.Inc. West New Brighton,N. Y.

Phillips, Lang & Co., Inc.
538 S. Dearborn St., Chicago, Ill.

Ernest F. Learned
141 Milk St., Boston 9, Mass.



Hunt Pivoted Bucket Conveyor, Showing Vertical Run.

LOGAN COUNTY COAL CORPORATION

SUCCESSORS TO

AMHERST FUEL COMPANY

PRODUCERS

HIGH GRADE GAS COALS

MINES LOCATED IN

LOGAN COUNTY
WEST VIRGINIA

GENERAL SALES OFFICES

UNION CENTRAL BUILDING
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MEMBERS

AMERICAN GAS ASSOCIATION
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THINK OF AUTOMATICALLY HOLDING YOUR SUPERHEATER HEATS PRACTICALLY CONSTANT.

THINK OF CONTROLLING YOUR SET SO AS TO GET EVERY POSSIBLE EFFICIENCY AND ECONOMY OF OPERATION OUT OF IT.

THINK OF OBTAINING THESE CONDITIONS, NOT BY ACCIDENT, BUT WITH ABSOLUTE REGULARITY.

The U. G. I. THERMO-AUTOMATIC CONTROL

DOES ALL THIS, BESIDES INCREASING THE EFFICIENCY OF GASMAKING LABOR

We have a Booklet describing it

THE U. G. I. CONTRACTING COMPANY

Broad and Arch Streets, Philadelphia

335 Peoples Gas Bldg., Chicago

928 Union Arcade, Pittsburgh

How to Start the NEW YEAR

No. B-515—Front Brackets—canopy—tile fender

Dedicate your sales plans and energy to the merchandizing of only the highest grade gas appliances which please with the service they render and their beautiful appearance the minute they are installed and continue for years after to create and spread good-will propaganda for the *big future of the industry*. It is an investment of brains and work that requires no risks but augurs well for increasing profit. When you sell Kennedy Heaters you are in reality "plussing the sale"—in other words you are giving the customer extra value for the money and getting extra value in the way of user advertising in return. You can start today by getting in touch with KENNEDY-TOOMBS, INC., Dept. A, 126 11th Ave., New York City.

POINTERS

Keep needle "A" low to reduce chimney gas loss due to excess air.

Keep needle "B" near zero on the Draft side; if needle gets on Pressure side the burning gases will be deflected downwards and burn out stoker parts and brickwork.

Keep needle "C" at, say, 3½ inches. If the fire travel of boiler is dirty this cannot be done without forcing "B" on Pressure side.

If a bad hole develops in fuel bed needle "C" falls back to zero.

A—DRAFT AT LAST PASS

B—DRAFT OVER FUEL BED

C—PRESSURE IN WINDBOX

Test cocks for checking accuracy at any point of scale

Patented U. S. Pat. Off.

WHY—Managers and superintendents prefer Precision "3 in 1" Gauges.

Fuel consumption is substantially reduced. Stoker repair bills are almost eliminated. Furnace brickwork repair bills are materially cut.

WHY—Chief engineers and combustion engineers prefer Precision "3 in 1" Gauges.

They cannot get their firemen to use any other kind. They can check entire scale for accuracy in a couple of minutes.

PRECISION INSTRUMENT CO.
NEWARK, N. J.

PRECISION
"3 IN ONE"
DRAFT GAUGES

Look for the Name "Precision"

The Superior Meter

MEN should utter nothing for which they would not be willingly responsible through time and eternity.

—*Abraham Lincoln*

Our wall motto—and our guide when talking about Superior Meters.

Make it yours!

"All that the name implies"

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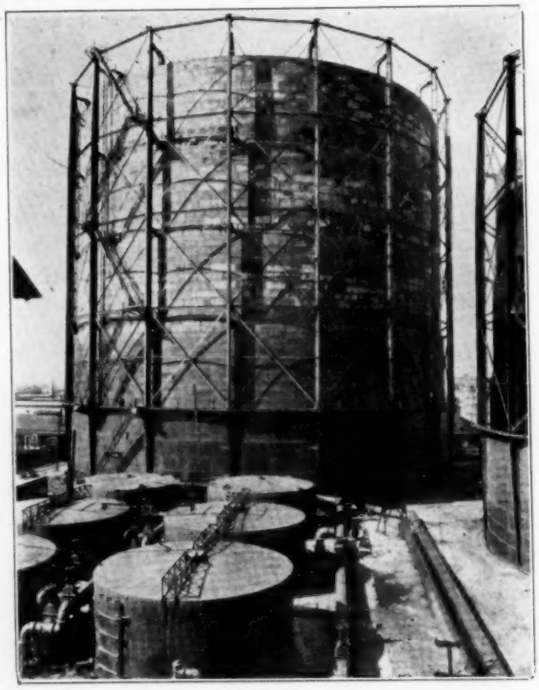

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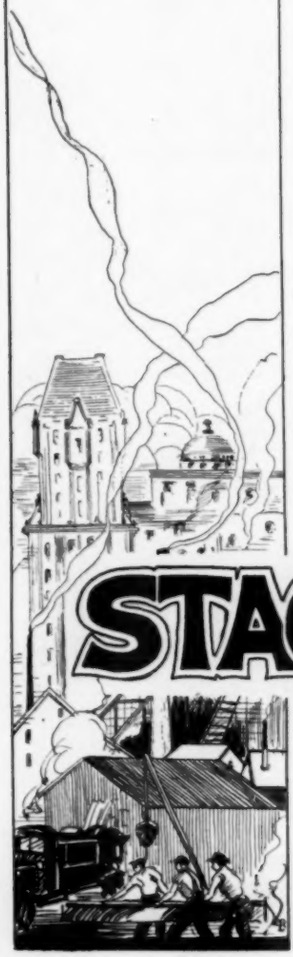
NEW YORK CITY

Gas Holders

During the past few years we have erected nearly 100 holders of capacity ranging from 100,000 cubic feet to 3,000,000 cubic feet.

Gas Plants

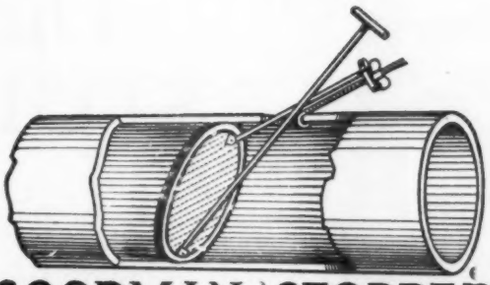


STACEY BROTHERS
GAS CONSTRUCTION CO.

Engineers and Builders of

GAS HOLDERS
and Gas Plants

CINCINNATI OHIO



For Repairing Street Mains

Goodman's Gas Main Necessities

1. The Goodman Stopper for shutting off street mains. Makes shut-off quick and certain. Absolutely safe, and admittedly Superior to any other method for opening up street mains for repair. No danger from pressure or leaks—once inserted it is a perfect plug.

2. Dependable Gas Main Bags. Canvas covered, protecting the rubber from the effects of tar and gas oil. In stock 3" to 24". We also carry Plain Rubber Gas Main Bags in stock up to 20 inches.

3. Tapping machines for high and low pressure gas mains.

4. A full line of street Department supplies, including Oil Burners for melting lead joints, Lead Melting Furnaces, oil and coke burning, Asbestos Joint Runners, Lead Pots, Plugs, etc.

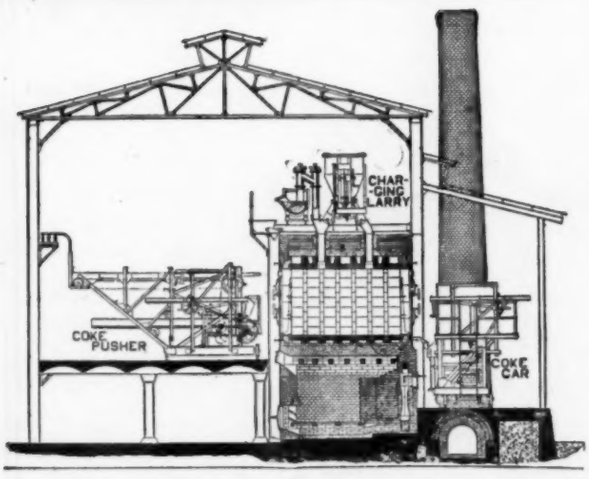
Order your Street Main Necessities from us.

Distance makes no difference; get in touch by mail.

Safety Gas Main Stopper Co.

523 Atlantic Avenue

Brooklyn, N. Y.



In the Fuel Emergency

We'll bet you didn't have any difficulty selling coke so far this winter—if you had any to sell.

And we'll bet again that you could have sold much more than you pro- for domestic use has received a big duced! This winter coke burning impetus. Immense strides have been made in the education of the public to the burning of coke. Necessity has favored this opportunity and has been a big help in marketing coke.

This state of affairs is not going to stop with this winter. It's going to continue. Householders who have used coke and seen its efficiency and its benefits, are not going back to coal. Are you alive to your opportunities?

Improved Horizontal Gas Ovens yield a better coke and give better gas. Our proposition is well worth while investigating.

The Improved Equipment Company

Engineers and Builders

24 State Street **New York**

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Stupakoff Instruments are manufactured under the personal supervision of Mr. S. H. Stupakoff who has spent a lifetime of study and research in the manufacture of high temperature precision instruments. The name Stupakoff is a guarantee of satisfactory workmanship and service under the most severe working conditions. One of the large activities of the Stupakoff organization is the planning and perfecting of temperature indicating and recording instruments to meet unusual conditions.

THE STUPAKOFF LABORATORIES

Manufacturers

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Look for this trade-mark on all instruments

It is well known and stands for quality

Why

294 good gas engineers have complete confidence in their selection of

IRON HYDROXIDE

as the perfect purifying material

IRON HYDROXIDE purifies most gas at one change and its life is longest in the field of purifying materials, hence 294 gas companies are using it today with complete satisfaction.

Write for performance data regarding IRON HYDROXIDE and note how its use will increase the capacity of your purifiers

IRON HYDROXIDE COMPANY

Paschal Station **Philadelphia**

IDEAL ROADWAY BOX

Sizes 16" Diam. to 48" Diam.

For protecting valves, and other underground apparatus

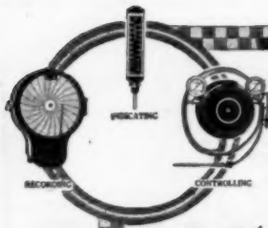
A Complete Cast Iron Sectional Manhole Quickly Installed by Common Labor. Adaptable to Any Depth. Adjustable to Changes in Grade.

Round Model Equipped with our Adjustable Manhole Top, which makes possible Readjustments and Replacements **without Disturbing the Pavement.**

Square Model

S. E. T. VALVE & HYDRANT COMPANY

50 Church Street [Hudson Terminal Building] **New York**



Tycos
temperature instruments

meet every demand and problem in temperature in the gas producing industry.
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Taylor Instrument Companies
ROCHESTER N.Y.
There's a Tycos or Taylor Temperature Instrument for Every Purpose

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GAS EFFICIENT INDUSTRIAL OIL FURNACES

UNIFORM TEMPERATURE
MAXIMUM OUTPUT
MINIMUM FUEL COST

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MISSOURI FIRE BRICK CO.
ST. LOUIS, MO.
Manufacturers, Designers and Constructors of Gas Benches
With Either Clay or Silica Retorts
Checker Brick and Water Gas Linings

THE WESTMORELAND COAL COMPANY
CHARTERED 1854
Mines situated on the Pennsylvania and the Baltimore and Ohio Railroads, in Westmoreland County, Pa.
POINTS OF SHIPMENT: PHILADELPHIA, BALTIMORE, SOUTH AMBOY, N. J.
Since the commencement of operations by this Company its well-known Coal has been largely used by the Gas Companies of New England and the Middle States, and its character is established as having no superior in gas-giving qualities, and in freedom from sulphur and other impurities.
PRINCIPAL OFFICE, 224 SOUTH THIRD STREET, PHILADELPHIA, PA.

HIGH PRESSURE

COMBINATION STYLE
(With Mercury Seal)

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REYNOLD'S
ARTIFICIAL GAS GOVERNORS
and
NATURAL GAS REGULATORS
For All Kinds of Pressure Reduction
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Reynold's Gas Regulator Co.

SERVICE GOVERNORS

"OLD STYLE"
(Without Seal)

Main Office and Works
ANDERSON, INDIANA

ISBELL-PORTER COMPANY

Machinists, Founders & Contracting Engineers

Newark, N. J.

PRODUCTS

CHARGING AND DISCHARGING MACHINES:
For through retorts.
COAL GAS BENCHES:
With horizontal retorts.
WOODALL-DUCKHAM SYSTEM:
Of continuous carbonization in vertical retorts.
MACKENZIE EXHAUSTERS:
Arranged for either motor drive or direct connected to vertical steam engines.
EXHAUSTER GOVERNORS AND COMPENSATORS.
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For salt water.
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For water gas.
ROTARY AMMONIA SCRUBBERS:
For coal gas.
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Of cast iron or steel for single, double or triple flow.
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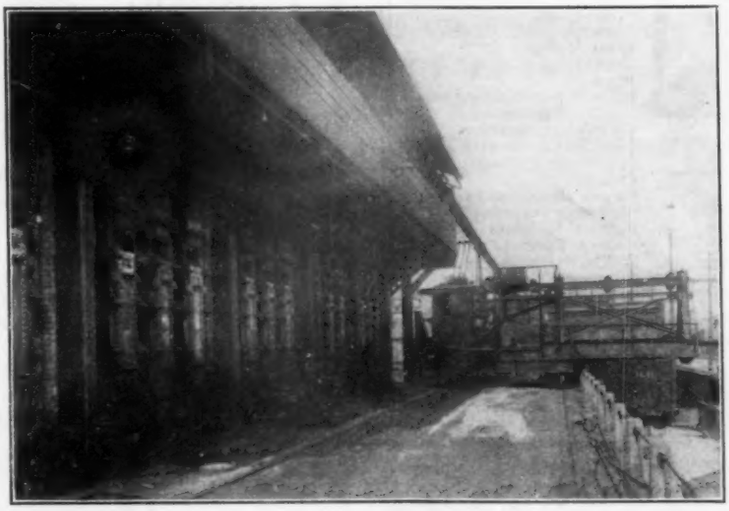
UNGER AMMONIA CONCENTRATORS AND SULPHATE PLANTS.
CAST IRON SPECIALS.
CARBURETED WATER GAS MACHINES.

Think of Parker-Russell First When You Think of

HORIZONTAL GAS OVENS

A Battery of Horizontal Ovens at Kalamazoo, Mich.



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THE PARKER-RUSSELL COMPANY

LACLEDE GAS BLDG. ST. LOUIS, MO.

Builders of Complete Coal Carbonization Plants

"Dead Ones Over Fifty"

Says the Management

And Looks at You

When your hair begins to silver,
When your hair begins to go,
You must watch your step, old fellow;
Others want your job, you know.

You can't afford to make even a small mistake, no matter how "solid" you think you are.

AND YOU MAKE A MONUMENTAL MISTAKE WHEN YOU GIVE THE CONCERN WITH STEAM ANYTHING BUT RIDGWAY ELEVATORS.

Do you ask why?

Because in the Ridgway Elevator we give ABSOLUTE PERFECTION IN ELEVATORS.

When the Company that employs you finds out they could have had Ridgway Elevators at no greater cost than the things you put over on them.

What they will say about you will be aplenty.

"Back number," "Had his day," "Losing his grip," "Got to be a dumbbell," "Osler was right," "Day of young men," "Dead line at fifty," "Too old," etc., etc.

"WHY DIDN'T MY ARCHITECTS AND ENGINEERS TELL US ABOUT THESE RIDGWAY ELEVATORS?"

Said the Bigg Mill Owner of Cleveland as he snapped his jaws:
With over 3000 concerns like this sample, concerns which are the biggest and best in the world, using more and more Ridgeway Elevators.

Standard Oil Co.	International Harv. Co.	Remington Typewriter Co
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Crane & Co. (Dalton)	John Morrell & Co.	United States Government
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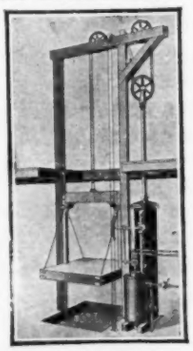
Swift & Co.	Firestone Tire & Rub. Co.	Sears, Roebuck & Co.
United Gas Imp. Co.	Consolidated Gas Co. (N. Y.)	United States Steel Co.
Larkin & Co. (Buffalo)		
General Electric Co.		
Penna. R.R.		

Do you wonder the old "DEAD ONE" stubs his toe when he fails to

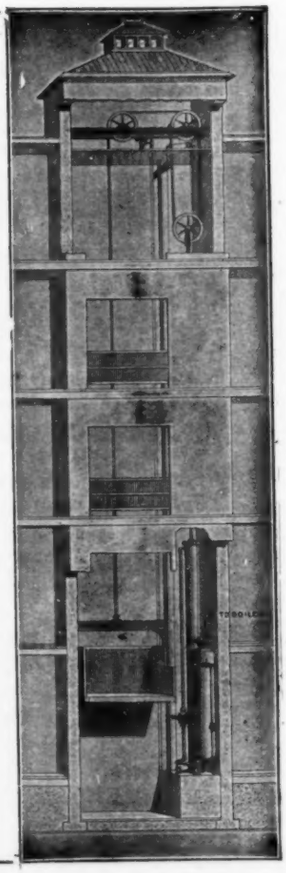
"HOOK 'ER TO THE BILER"

Direct Acting

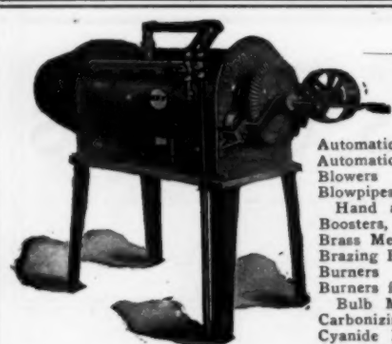
OVER 3000 IN DAILY USE



Double Geared



CRAIG RIDGWAY & SON CO., Coatesville, Pa.
ELEVATOR MAKERS TO FOLKS WHO KNOW



No. 29 Heating Machine

For continuous Hardening or Annealing; for Hardening Ball Bearings, Detachable Saw Teeth, or for Annealing Brass or any other work not exceeding 2½" greatest measurement.

We Make

- Automatic Heat Controllers
- Automatic Quenching Tanks
- Blowers
- Blowpipes or Blow-Torches, Hand and Stand
- Boosters, Gas
- Brass Melters
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- Carbonizing Machines
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- Forges, Glass Bending
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- Oven Furnaces
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Let us estimate on your Heat Treating problem. Write today.

American Gas Furnace Co.

Main Office and Works:
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FLANGE END

VALVES

We can furnish Valves for working pressures up to 1200 lbs. per sq. in.

Send for Circular 5

The LUDLOW VALVE MANUFACTURING COMPANY

TROY, N. Y.

New York 62 Gold Street	Boston Oliver Building	Philadelphia Harrison Building
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FULTON LOW PRESSURE GOVERNORS

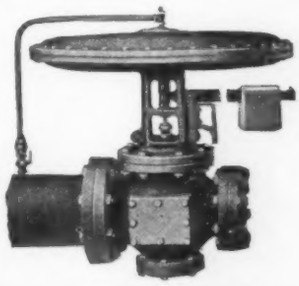
Fulton Low Pressure Governors are designed to reduce the pressure in the service mains as low as may be convenient for safe and economical combustion.

They are generally used to reduce from one to fifty pounds on the high pressure side to a few ounces.

They may be set to reduce to two ounces, or any pressure up to one pound. Any pressure desired is instantly accomplished by changing the weight on the lever.

Our improved style of valve makes a perfectly tight joint, thus preventing increase of pressure on low side when the consumption is light or entirely shut off; and, being perfectly balanced, it is not affected by the variations of pressure that may occur on the inlet side.

Made in all sizes up to 24 inches.



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The CHAPLIN-FULTON MANUFACTURING CO.

PITTSBURGH PENNSYLVANIA

POWER DRIVEN PRESSURE REGULATORS

For Controlling Suction on Gas Retorts and Ovens

Uniform heating value of the gas.

Increased yield of gas.

No carbon or standpipe troubles.

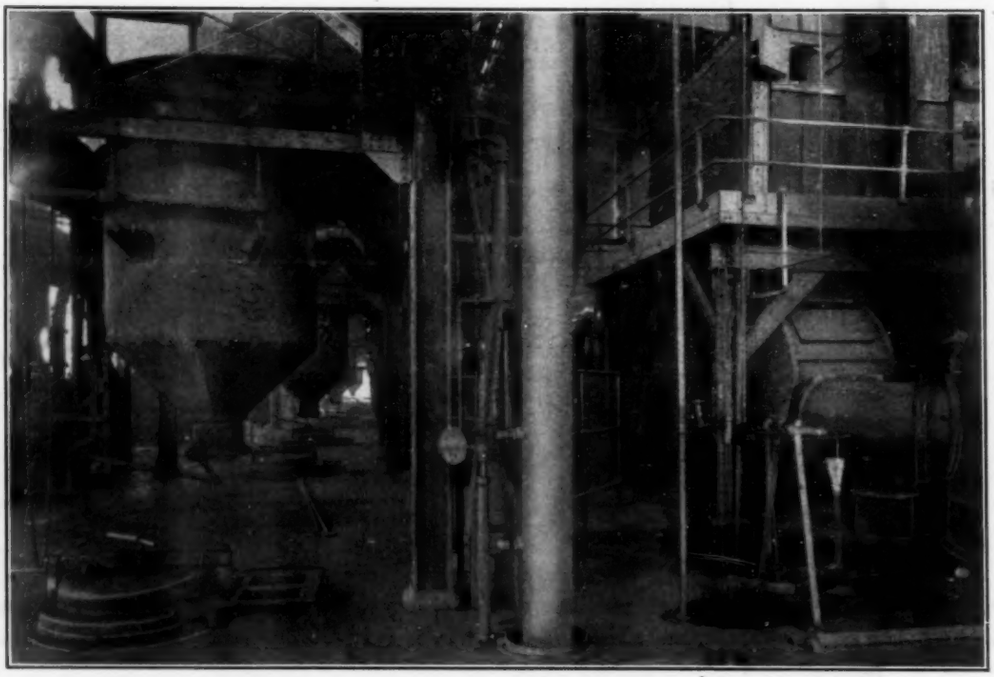
Gas inlet is at one side of body.

Gas outlet is normally at bottom, but may be placed directly opposite inlet.

THE GAS MACHINERY COMPANY

CLEVELAND, OHIO

Generator House Equipment



Operating floor of generator house D, Astoria plant of Consolidated Gas Co. of New York

Picture shows operating floor of generator house D, Astoria Light, Heat and Power Co., Astoria, L. I. This is all Bartlett Hayward equipment—including Generator, Fuel Charging Hopper, Carburetor, Superheater, Hot Valve and Waste Heat Boiler.

Company Member American Gas Association

The BARTLETT HAYWARD CO.

Engineers and Founders

BALTIMORE NEW YORK

Welsbach Semi-Indirect Fixtures possess many exclusive features. Numbered among these are the baffles designed to prevent discoloration of the ceiling and metal work. Special lacquers have been used to make permanent the many beautiful finishes in which these fixtures are furnished.

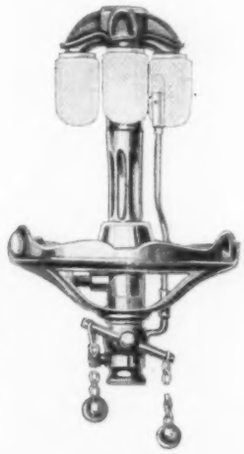
Meet Your Lighting Competition with These Two Powerful Weapons

The beauty, economy and practicability of modern gas lighting are expressed to their fullest degree in these two Welsbach Products. Our Semi-Indirect Lighting Fixtures and the "C. E-Z" Light will give you the means and the power to meet all lighting competition.

Gas users the country over recognize in the name WELSBACH the sign of gas lighting perfection. Your consumers will find in these two Welsbach Lights all those features that assure brilliance of illumination, correct distribution of light and greatest convenience.

Because of their adaptability and many exclusive features, Welsbach Semi-Indirect Fixtures and "C. E-Z" Lights lend themselves especially well to sales campaigns. Many thousands have been successfully sold on this basis.

Put volume and strength into your lighting business by giving your consumers the best there is. Let us tell you how we may co-operate in planning and pushing a sales campaign in your territory.



The "C. E-Z" Light presents the ideal means of lighting a room with wall brackets. Readily installed in place of the old flat flame burners, they prove a source of brilliant, eye-comforting illumination.

WELSBACH COMPANY

Gloucester, N. J.

Member American Gas Association

LIGHTING FIXTURES
GAS MANTLES GAS HEATERS

Welsbach **PRODUCTS**

3-inch connection to flue to be made here.

COLD WATER INLET. See "cold water inlet tube."

COLD WATER INLET TUBE. Carries cold water from inlet down to near bottom of storage tank.

AIR CELL ASBESTOS INSULATION. Reduces radiation and keeps water hot.

CORRUGATED HEATING FLUE. Corrugations afford maximum heating surface and absorb contraction and expansion strain.

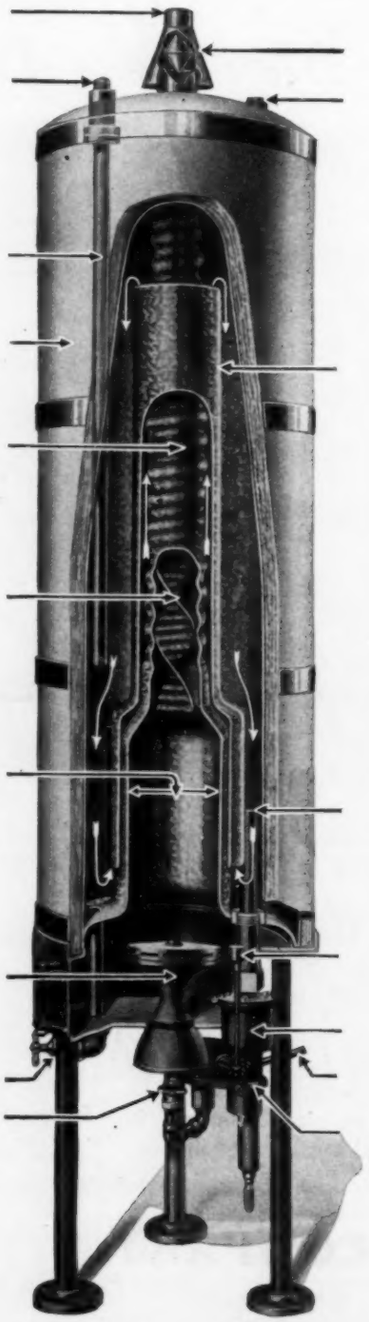
RETARDER OF HEAT BAFFLE. Causes heat to travel slowly and spirally enabling the water to thoroughly abstract heat.

LARGE HEATING CHAMBER. Provides ample heating area and insures perfect combustion of gas. Base on which boiler stands is enclosed, admitting only enough air to support combustion.

MAIN BURNER. Flame comes out horizontally.

DRAIN COCK. To drain boiler.

MAIN BURNER COCK. Always turned on FULL when heater is in operation.



3-INCH DRAFT HOOD. Prevents strong drafts either up or down chimney.

HOT WATER OUTLET. Hot water is drawn from the top of the heater.

CIRCULATION JACKET. Induces even temperature of water throughout. The vertical arrows indicate how circulation takes place—the cold water is taken in at the bottom of the circulation jacket and is kept next to the heating chamber and flue, heating rapidly and ascending.

THERMOSTAT TUBE. Projects into the water.

PILOT LIGHT.

THERMOSTAT. The heart of the heater. It automatically turns the gas on or off.

GAS INLE. ½-inch gas supply all that is necessary.

PILOT COCK. Controls gas supply to pilot.

Lovekin

AUTOMATIC GAS WATER HEATER

There is the Evidence—What is your Verdict?

In the cut-out view of the Lovekin Automatic Gas Water Heater on the opposite page we are submitting the reasons for the Lovekin's fast growing popularity.

If you will take the time to study it, you'll readily appreciate, why in ten years, the Lovekin has taken the place which it has—in the Gas Water Heater Manufacturing industry.

You will appreciate, too, why the Lovekin makes satisfied customers of gas consumers.

Note the absence of copper coils, and its sturdy, simple construction throughout.

Tried and proven by ten years' use—we guarantee its durability and operation.

LOVEKIN WATER HEATER CO.

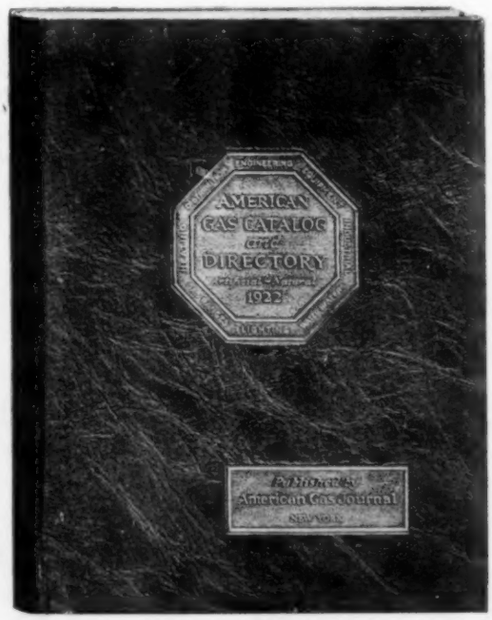
Main Office and Works—39 to 43 Laurel Street, Philadelphia

New York Office—258 Canal Street

Chicago Office—15 East Van Buren Street

Lovekin

AUTOMATIC GAS WATER HEATER



8 by 11 inches, handsomely bound in brown leatherette, with the name gold embossed.

The American Gas Catalog *and* Directory

53 Park Place, New York

$2.50 Postpaid

FOR THE EXECUTIVE

Every page is filled with suggestions that will help solve the most perplexing problems. It discusses the manufacture, distribution and utilization of gas in all its forms, offers titles, charts and formulas that provide short cuts in the routine of every well managed company. Page after page will be found describing the products of the leading manufacturers of equipment and appliances.

No executive should be without his personal copy constantly at hand.

FOR THE PRODUCTION DEPARTMENT

No matter what your method of manufacture may be, it contains a carefully prepared and edited suggestion that discusses in simple, non-technical language probably the very problem that is before you now. Coal gas, oil gas, water gas and producer gas manufacture are discussed; general rules given for boiler operation, purification, routine plant tests; station metering treated in a complete manner.

At least one copy should be in the Production Department.

FOR THE DISTRIBUTION DEPARTMENT

In this section is found data that is so complete that you will pronounce it one of the greatest time and money savers that you have ever encountered. Every phase of the daily work has been dealt with, while the charts and tables presented will show you actually just how the American Gas Catalog and Directory will save many times its cost during the year.

The Distribution Department that does not have the American Gas Catalog and Directory is losing the service and advice of some of the best engineers of the country.

FOR THE SALES AND INDUSTRIAL DEPARTMENT.

The Sales or New Business Department will find in it detailed information covering every activity. The Industrial business will come easier when you are able to present to your customers facts and figures that have been carefully worked out for you. The domestic appliance, whether range, water heater, room heater or gas-fired boiler, is discussed from the sales standpoint as well as having detailed, accurate information that you will find invaluable in your every task of the day.

Several copies should be in every Sales or New Business Department.

The New Improved Open End Simplex Sells

OUR engineers developed the New Open End Model Simplex Ironer after much thought. Our Sales Department received it enthusiastically. The dealers did the same—but the one who thinks most of it is the housewife who uses the New Improved Simplex. She finds its usefulness enlarged to the point where she need no longer touch a hand iron. The Simplex irons everything—irons better and in quicker time. The new Simplex offers an opportunity for the Gas Company to make many profitable sales.

SIMPLEX IRONER
"THE BEST IRONER"

American Ironing Machine Co.

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70 W. 45th St.
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POSITIONS WANTED

WANTED—Position wanted as Superintendent of manufacturer or as manager of small or medium size Gas Company. Am first class gas engineer, technically educated and practically trained. Have had many years extensive experience in economical operation of coal and water gas plants. Experienced in all details of modern gas manufacture, by-products, construction, new business, low and high pressure distribution. Familiar with laboratorial work. At present, Superintendent. Middle aged. Address Box No. 554, care of American Gas Journal, 53 Park Place, New York City.

WANTED—Position as manager of medium-sized gas and electric or straight gas property. At present employed as superintendent, but desire broader responsibilities. Address Box 547, care of the American Gas Journal, 53 Park Place, New York City.

WANTED—Position as superintendent of coal gas plant or coal and water gas. Prefer small plant where I can work into the distribution and service end of the business. Am employed at present as foreman, but want to change first of year. Address Box 552, care of American Gas Journal, 53 Park Place, New York City.

POSITIONS WANTED

WANTED—Position as engineer or manager of large gas property. Am at present employed as Manager of gas property in city of 200,000 population. Reasons for wanting change, certain unpleasant relations. Experienced in coal and water gas manufacture and distribution, and as executive embracing seventeen years. College graduate, 40 years old. Served in France as Field Officer combat troops during war. Address Box No. 551, care of the American Gas Journal.

MR. GAS MAN—

Is your plant paying a dividend?

If not, you need my service. I am a technical man and experience covers all branches of the gas business. High and low pressure, distribution, manufacturing, coal and water gas, construction work, new business and accounting, etc. Have had six years experience in distributing department, three years as superintendent of combination coal and water gas plant, and three years as general manager of a coal gas plant in city of twenty thousand population. Reference from present and former employers. Address "Ambition", care of the American Gas Journal.

DIVIDEND NOTICE

OFFICE OF

The United Gas Improvement Co.

N. W. Corner Broad and Arch Streets

Philadelphia, December 13, 1922.

The Directors have this day declared a quarterly dividend of one and one-half per cent (75c. per share) on the Common Stock of this Company, payable January 15, 1923, to shareholders of Common Stock of record at the close of business December 30, 1922.

Checks will be mailed.

I. W. Morris, Treasurer.

DIVIDEND NOTICE OF THE AMERICAN LIGHT & TRACTION COMPANY

The Board of Directors of the above Company at a meeting held January 2nd, 1923, declared a CASH dividend of 1½ Per Cent. on the Preferred Stock, and CASH dividend of 1 Per Cent. on the Colmon Stock, and a dividend at the rate of one share of Common Stock on every One Hundred (100) shares of Common Stock outstanding, all payable February 1st, 1923, to stockholders of record at the close of business on January 12th, 1923.

The Transfer Books will close at 3 o'clock P. M. on January 12th, 1923, and will reopen at 10 o'clock A. M. on January 26th, 1923.

C. N. JELLIFFE, Secretary.

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KELLER ADJUSTABLE COKE CRUSHER

Strong, Simple, Durable. Will Crush any Size Desired.

C. M. KELLER

COLUMBUS, IND.

Correspondence Solicited

UTILIZE YOUR GAS LIQUOR

NO EXTRA LABOR OR OPERATING EXPENSES

Improved AMMONIA Concentrator

About 130 in use. Write to

STECH & CSIUS, Patentees, or

MICHIGAN AMMONIA WORKS, Detroit, Mich.

PURIFYING MATERIAL, — BAGGED OR BULK

Manufacturers of GOVERNORS, APPARATUS and EQUIPMENT

IRON Connelly Iron Sponge and Governor Co. New York, Chicago U.S.A. **SPONGE**

WE SOLD

all of the purifiers, meter, condensers, tar extractors, tanks, 7 ft. water gas set, etc., and still have 1 7-ft. set for sale, all the property of the Public Service Corporation of New Jersey. We would like to show you what we can do for you—ask them.

WE WANT

a turbo blower for a 4-ft. and one for a 5-ft. set, some steel purifiers, condensers, exhausters, etc. —in fact, any good useful gas apparatus. Please send us your list.

WE HAVE FOR SALE

2 8.5-ft x 22-ft. scrubbers, wood filling, fine condition, price each f. o. b. cars, $500.00, and other good serviceable gas apparatus that it will pay you to investigate.

Let Us Hear from You

EQUIPMENT EXCHANGE

SPECIALISTS IN GAS EQUIPMENT

Bullitt Building Philadelphia, Pa.

THE J. G. WHITE ENGINEERING CORPORATION

Engineers—Constructors

Industrial Plants, Buildings, Steam Power Plants, Water Powers, Gas Plants, Steam and Electric Railroads, Transmission Systems

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Specialist in the design, construction and supervision of Gas Properties.

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Unger Ammonia Stills

Make a Superior Concentrate without Salting Lime Supply with Minimum Amount of Water and Attention

JOHN S. UNGER 634 Grace Street Chicago

IRON OXIDE

Are you satisfied with your purification results? We make our oxide from clean cast iron borings, pine shavings and lime, just as you would make it for your own use.

LET US SOLVE YOUR PURIFICATION TROUBLES

GAS PURIFYING MATERIALS CO.

FOOT OF HALSEY STREET LONG ISLAND CITY, N. Y.

WILLIAM W. RANDOLPH, M. E.

CONSULTING ENGINEER

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In addition to the standard tests embracing proximate analyses and heating values, the LABORATORIES are prepared to undertake special investigations such as the determination of the fusing point of ash, the gas yield and quantitative determinations of ammonia, nitrogen, Coal tar, etc. . Our facilities are at your service.

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80th Street and East End Avenue

New York City

American Gas Catalog and Directory

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53 Park Place, New York

Russell Engineering Company St. Louis

Coal Carbonization Plants, Benches, Repairs, Improvements, Extensions, Apparatus

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ENGINEERS

Specializing in Public Utilities

Management, Operation, Construction, Plans, Reports, Valuation, Rates, Public Relations, Accounting, Purchasing

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CHICAGO

The Sign of Protection

Dixon's
Silica-Graphite Paint

is immune from attacks by acids, alkalies, gases and fumes. Impervious to water and not affected by heat or cold.

It dries into a smooth elastic surface and lasts for long periods of time because of the pigment, flake silica-graphite and the vehicle, pure boiled linseed oil.

Dixon's is the only paint in which the graphite and silica are naturally combined. Write for Booklet No. 231-B.

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Jersey City, New Jersey
Established 1827

Consulting Engineer

Specializing Coal and Water Gas Properties

Valuation, Appraisal, Rates
Management, Operation, Counsel

Designing New and Rebuilding Old Plants

FRED W. FREESE

First National Bank Bldg.
Chicago, Ill.

TO FACILITATE HANDLING

ULCO LEAD WOOL

IS PUT UP
IN ROPE FORM

United Lead Company

111 BROADWAY, NEW YORK.

Offices in All Principal Cities

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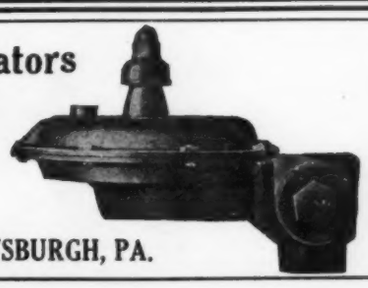
"EMCO" Meters and Regulators

For Artificial and Natural Gas

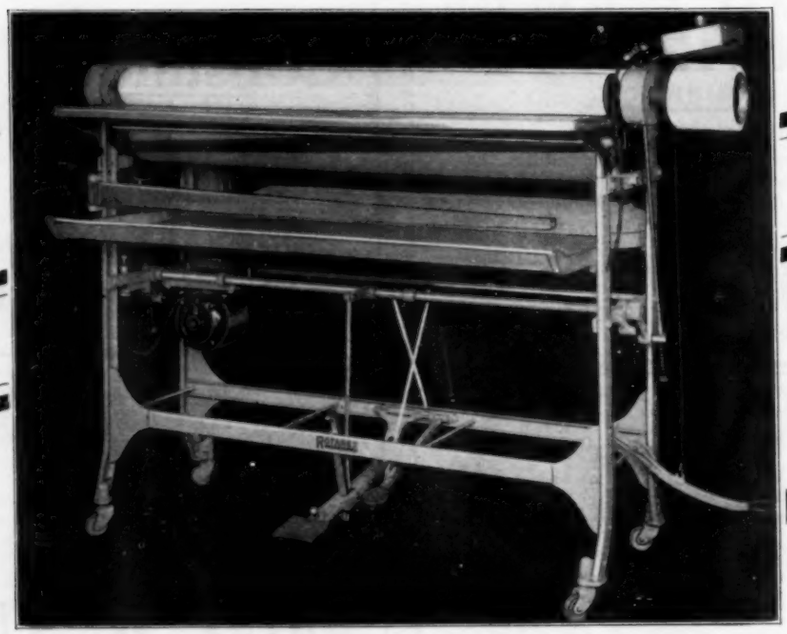
Meters for Low and High Pressure.
Proportional Meters, Provers, Gauges and Burners.
Regulators of all kinds.

Write for Catalog and Prices.



EQUITABLE METER CO. 432-34-36 First Avenue PITTSBURGH, PA.

RŌTAREX
HOME DOUBLE ROLL
IRONER



RŌTAREX
HOME DOUBLE ROLL
IRONER

Saves 52 Afternoons Every Year

For the Housewife

EVEN the most skillful laundress must have a full day's time to do the weekly ironing for a household of six persons by hand on an ironing board.

For the woman who owns a ROTAREX Home Double Roll Ironer every Tuesday afternoon is a half holiday because her ironing is all finished in from two to three hours of the morning. In 10 years the owner of a ROTAREX Ironer gains 520 afternoons of leisure to spend as she pleases; or 1040 afternoons in 20 years.

Yet this great saver of time and labor sells for only $152.50, the lowest price asked for any home ironer of standard quality.

Is there among all the customers of your company a single housekeeper who would not be glad to pay $1.00 to save an entire afternoon of work and time each week, or $520.00 in only 10 years? The ROTAREX Ironer gives them to her at a cost of 26½c each

In a word, the gas company that cannot successfully merchandise the ROTAREX Home Double Roll Ironer is not likely to make a success in merchandising any other home appliances.

We will gladly ship a ROTAREX Home Double Roll Ironer to any gas company for examination and comparison. Simply write us that you are interested.

Made and guaranteed by the manufacturers of ROTAREX Electric Clothes WASHER. "Built to do 10,000 Washings," and the famous APEX Electric Suction Cleaner—"The Ace of Suction Cleaners."

THE APEX ELECTRICAL DISTRIBUTING COMPANY

1067 East 152nd Street, Cleveland, Ohio

Export Office and Show Room
461 Eighth Avenue
New York, N. Y.

CANADIAN FACTORY
Apex Electrical Manufacturing Company, Ltd.
102 Atlantic Ave., Toronto, Ont.

ACME GAS COCKS

GAS COCKS FOR ALL PURPOSES

WE manufacture a large variety of styles and sizes of gas cocks for ranges, hot plates, water heaters and other gas appliances. Made according to all specifications, including A. G. A. and U. G. I.

Our methods of manufacture assure you a high grade product at a minimum cost.

The modern manufacturing facilities contained in our plant in Detroit, enable us to take care of customers and make prompt shipments in a manner that we consider to be unexcelled.

We will be glad to send you a booklet showing the different styles, sizes and prices of Acme Gas Cocks. Consult us as to your Gas Cock Requirements.

Acme Brass Works

8211 Collins Avenue and
Belt Line R. R.

DETROIT, MICH.

Lux Material

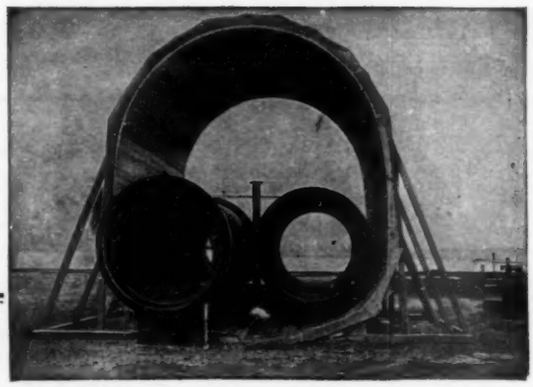
Since 1920 to date we have delivered over 15000 tons of "Lux Material" to a leding American Gas Works.

The number of customers for 1922 is more than double the number for 1921.

We have just issued a new pamphlet with comparative statements as to cost and results. This pamphlet is of enormous value to any Gas Engineer and may be obtained on application from the main office.

The Alpha-Lux Company
(Incorporated)
192 Front Street New York City

January, 1923



Model of Astoria Tunnel with 72-inch Gas Pipe in Place

U. S. CAST IRON GAS PIPE

In the Astoria Tunnel

Two lines of "The Pipe That Outlasts the Ages" were laid side by side as shown in the picture.

Cast Iron pipe has a record of 250 years of excellent service. The first length of cast iron pipe ever made is still in use. The first piece of cast iron pipe ever laid in this country is still in use.

Don't overlook these facts when deciding upon the pipe for your next extensions or new gain mains.

UNITED STATES CAST IRON PIPE AND FOUNDRY COMPANY

724 E. Pearl Street, Burlington, N. J.

"RUTZ"

RANGE LIGHTER

"Just Press the Button"

Makes Sales Easier

The range that is "Rutz" equipped has a forceful sales argument right at hand, and housewives appreciate it.

MILWAUKEE GAS SPECIALTY CO.

2015 Clybourn St. Milwaukee, Wis.

The First Thing to Look For in a Gas Iron

It isn't appearance—it isn't design—it isn't selling features.

It isn't even the material that it is manufactured of.

It is a little word spelled out in raised letters on the top of the iron, and it spells "IMPERIAL."

Find this and you will be assured of fine appearance, perfect and practical design, a great many easy selling features, and above all the very best of material put into its construction from tubing and steel to handle and burners.

You want a gas iron that will not "flare up" and burn the clothes, that is odorless, that heats the bottom first and not the sides, that will stand the hardest usage and almost never comes back for repairs. Then, by all means choose your gas iron by the little word spelled out on the top of the iron—IMPERIAL. Imperial Gas Irons are sold through the best dealers only.

GENERAL SPECIALTY COMPANY

455 Eleventh Avenue

New York City

The Imperial Gas Iron has been known as the Humphrey Iron to the Gas Industry, and embodies, with additional improvements, all the features which made the latter such an outstanding success.

Buyers Reference Index

See page 39 for advertisements of these products

AMMONIA STILLS
Unger, John S.

ANNEALING MACHINES
Rotary
American Gas Furnace Co.
Improved Appliance Co., The

BAGS
Gas
Safety Gas Main Stopper Co.
See also Stoppers.

BAROMETERS
Taylor Instrument Co.

BENCHES
Complete
Bartlett-Hayward Co.
Davis & Farnum Mfg. Co.
Gas Machinery Co.
Gardner, James, Jr., Co.
Gautier & Co., J .H.
Improved Equipment Co.
Missouri Firebrick Co.
Isbell-Porter Co.
Parker-Russell Mining & Manufacturing Co.
Russell Engineering Co.
Stacey Brothers Gas Constr. Co.
Steere Engineering Co.
Western Gas Construction Co.
West Gas Improvement Co.

BENZOL
Bartlett-Hayward Co.
Belgian-Amer. Coke Oven Corp.
Gas Machinery Co.
Koppers Co., The
Western Gas Construction Co.

BLOWERS
Pressure
American Gas Furnace Co.
Connersville Blower Co., The
Improved Appliance Co., The

BOILERS
Gas-Fired
Improved Appliance Co., The

BOILER GRAPHITE
Dixon Crucible Co., Joseph

BOOSTERS
Connersville Blower Co., The
American Gas Furnace Co.

BURNERS (Industrial)
Improved Appliance Co., The
Surface Combustion Co.
Fuel
American Gas Furnace Co.
Connelly Iron Sponge & Gov. Co.

BY-PRODUCT PLANTS
Bartlett-Hayward Co.
Belgian-Amer. Coke Ovens Corp.
Gas Machinery Co.
Koppers Co., The
Steere Engineering Co.
Western Gas Construction Co.

CALORIMETERS
American Meter Co., Inc.
Precision Instrument Co.
Stupakoff Laboratories

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Gardner, James, Jr., Co.
Gautier & Co., J. H.
Gerould, C. L.
Parker-Russell Min. & Mfg. Co.

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Davis & Farnum Mfg. Co.
Hunt, C. W. Co.
Isbell-Porter Co.
Parker-Russell Min. & Mfg. Co.
Stacey Manufacturing Co., The
Gas Machinery Co.
Stacey Bros. Gas Construction Co.

COCKS
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Detroit Brass & Malleable Co.
Hale Mfg. Co.
Johnson Gas Appliance Co.

COALS
Amherst Fuel Co.
Westmoreland Coal Co.

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Davis & Farnum Mfg. Co.
Gas Machinery Co.
Improved Equipment Co.
Isbell-Porter Co.
Koppers Co., The
Parker-Russell Min. & Mfg. Co.
Russell Engineering Co.
Stacey Bros. Gas Constr. Co.
Stacey Manufacturing Co., The
United Gas Improvement Co.
Western Gas Construction Co.
West Gas Improvement Co.

COAL AND COKE HANDLING MACHINERY
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Isbell-Porter Co.
Hunt Co., C. W.
Parker-Russell Min. & Mfg. Co.
Russell Engineering Co.

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Bartlett-Hayward Co.
Keller, C. M.

COKE OVENS
Belgian-Amer. Coke Ovens Corp.
Improved Equipment Co.
Koppers Co., The

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United Gas Improvement Co.
Low Pressure
Cox—American Gas Journal
Fox—American Gas Journal
High Pressure
Cox—American Gas Journal

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See Purifiers

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Davis & Farnum Mfg. Co.
Gas Machinery Co.
Hunt, C. W., Co.
Isbell-Porter Co.
Stacey Bros. Gas Constr. Co.
Stacey Manufacturing Co., The
Western Gas Construction Co.

DERRICKS—PIPE
Safety Gas Main Stopper Co.

DIES
Nye Tool & Machine Works

DISCHARGING MACHINERY
Bartlett-Hayward Co.
Hunt, C. W. Mfg. Co.
Improved Equipment Co.
Isbell-Porter Co.

DRIP PUMP BOX
Keller, C. M.

ELEVATORS
Ridgway, Craig, & Sons

ENGINEERS
Combustion
Improved Equipment Co.
Improved Appliance Co., The
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Surface Combustion Co.
Consulting
Allison, Walter A.
Baehr, W. A.
Byllesby & Co., H. M.
Fisher, H. A., Co.
Freese, Fred W.
Gellert Engineering Co.
Improved Equipment Co.
Randolph, W. W.
White, J. G. Engineering Corp.
Contracting
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Bartlett, William E.
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Improved Equipment Co.
Isbell-Porter Co.
Koppers Co., The
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Russell Engineering Co.
Stacey Bros., Gas Constr. Co.
Stacey Manufacturing Co., The
Steere Engineering Co.
United Gas Improvement Co.
Western Gas Construction Co.

EXHAUSTERS
Connersville Blower Co., The
Davis & Farnum Mfg. Co.
Gas Machinery Co.
Isbell-Porter Co.
Western Gas Construction Co.

FIREBRICK—CHECKER BRICK
Gas Machinery Co.
Gardner, James, Jr., Co.
Gautier & Co., J. H.
Improved Equipment Co.
Missouri Firebrick Co.
Parker-Russell Min. & Mfg. Co.
Russell Engineering Co

FITTINGS
Donaldson Iron Co.
Steere Engineering Co.
Western Gas Construction Co.
U. G. I. Contracting Co.

FIXTURES
General Gas Light Co.
Gleason, E. P., Mfg. Co.
Welsbach St. Lt. Co. of Amer.
Welsbach Co.

FURNACES (Gas Hardening)
American Gas Furnace Co.
Improved Appliance Co., The
Surface Combustion Co.

GAS ANALYSIS APPARATUS
United Gas Improvement Co.

GAS PLANTS, COMPLETE
Bartlett-Hayward Co.
Davis & Farnum Mfg. Co.
Gas Machinery Co.
Isbell-Porter Co.
Koppers Co., The
Parker-Russell Min. & Mfg. Co.
Russell Engineering Co.
Stacey Manufacturing Co., The
Stacey Bros. Gas Constr. Co.
United Gas Improvement Co.
Western Gas Construction Co.
West Gas Improvement Co.

GAS-TESTING APPARATUS
American Meter Co., Inc.
Equitable Meter Co.
Lambert Meter Co.
Superior Meter Co.
Sprague Meter Co.

GAUGES
Draft
Precision Instrument Co.
Pressure-Recording
American Meter Co., Inc.
Helme & McIlhenny
Lambert Meter Co.
McDonald & Co., D.
Pittsburgh Meter Co.
Precision Instrument Co.
Superior Meter Co.
Sprague Meter Co.
United Gas Improvement Co.

GLASSWARE
Globes, Shades and Bowls
Welsbach Co.
Gleason, E. P., Mfg. Co.

GLOBES, GAS
Gleason, E. P., Mfg. Co.
Welsbach Co.

GOVERNORS
American Meter Co., Inc.
Chaplin-Fulton Mfg. Co.
Connelly Iron Sponge & Gov. Co.
Davis & Farnum Mfg. Co.
Equitable Meter Co.
Reynolds Gas Regulator Co.

Automatic
Equitable Meter Co.
Steere Engineering Co.

Coke Oven
Equitable Meter Co.
Gas Machinery Co.
Steere Engineering Co.

District
Helme & McIlhenny
Isbell-Porter Co.
Steere Engineering Co.

Exhauster
Connelly Iron Sponge & Gov. Co.
Isbell-Porter Co.

High Pressure
Chaplin-Fulton Mfg. Co.
Reynolds Gas Regulator Co.
Sprague Meter Co.

Low Pressure
Chaplin-Fulton Mfg. Co.
Reynolds Gas Regulator Co.

Retort House
Gas Machinery Co.
Isbell-Porter Co.
Steere Engineering Co.
Western Gas Construction Co.

Service
Chaplin-Fulton Mfg. Co.
Equitable Meter Co.
Gas Machinery Co.
Sprague Meter Co.

Station
Equitable Meter Co.
Gas Machinery Co.
Helme & McIlhenny
Reynolds Gas Regulator Co.
Station Automatic
Gas Machinery Co.
Western Gas Construction Co.

HEATERS
Hoffman Heater Co.

HEATERS—ROOM
Crane Co., Wm. M.
General Gas Light Co.
Kennedy-Toombs, Inc.
Welsbach Company

HEATING MACHINES
American Gas Furnace Co.
Improved Appliance Co., The

HOLDERS
Bartlett-Hayward Co.
Cruse-Kemper Co.
Davis & Farnum Mfg. Co.
Stacey Bros. Gas Constr. Co.
Stacey Manufacturing Co., The
Western Gas Construction Co.

HOUSE HEATING
Automatic
Wales Co.

HYDROGEN GAS APPARATUS
Improved Equipment Co.
Western Gas Construction Co.

To the Alert Gas Man

the advertising pages are as interesting as the text pages. He realizes that a knowledge of the tools of his trade is as important as the theories that underlie it and the practices upon which it is founded. That is why he carefully scans each new advertisement and often re-reads each veteran. Do you?

Established 1858 Incorporated 1890

J. H. GAUTIER & CO.

Jersey City, N. J.

COAL GAS BENCHES

Silica Retorts and Settings
Clay Gas Retorts Fire Brick
Water Gas Linings, Etc.

Member American Gas Association

GAS METERS

Write for Description

Republic Flow Meters Co.
2202 Diversey Parkway Chicago

New York Philadelphia Denver
Kansas City Detroit Dallas
Pittsburgh Boston Birmingham

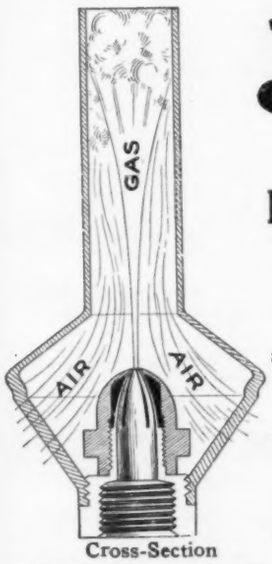
Dominion Flow Meters Co., Toronto, Canada
Herbert Greene & Co., London, England

CRUSE-KEMPER CO.

Gas Holders C-K CO Tanks Purifiers

Steel Plate Work
AMBLER, PA.

Learn More About JOHNSON



Cross-Section
Johnson Bunsen Burner

Industrial Furnaces and Appliances

The Burner that makes a blower unnecessary.
Perfect adjustment.
Highest flame temperature.
Without a Blower.
Used in all Johnson Furnaces and Appliances.

Write for Complete Catalog

JOHNSON GAS APPLIANCE CO. Cedar Rapids IOWA

SPRAGUE METERS

No. 1-A METER

Represent twenty years of progress

Send for bulletin No. 7

SPRAGUE METER CO.

BRIDGEPORT, CONN.

Los Angeles San Francisco Davenport, Ia.

Buyers' Reference Index

See page 39 for advertisements of these products

INDUSTRIAL FUEL APPLIANCES
American Gas Furnace Co.
Improved Appliance Co., The
Needham Gas Appliance Co.
Surface Combustion Co.

INSTRUMENTS
Recording
American Meter Co.
Pittsburgh Meter Co.
Precision Instrument Co.
Stupakoff Laboratories
Taylor Instrument Co.

IRONS—GAS
General Specialty Co.

IRON SPONGE
Connelly Iron Sponge & Gov. Co.
Iron Hydroxide Co.

IRONING MACHINES
American Ironing Machine Co.
Apex Elec. Distributing Co.

LAMPS
General Gas Light Co.
Gleason, E. P., Mfg. Co.
Welsbach Co.
Welsbach Street Lighting Co.

LAMP POSTS
Davis & Farnum Mfg. Co.
General Gas Light Co.
U. S. Cast Iron Pipe & Fdry. Co.
Welsbach Street Lighting Co.

LEAD WOOL
United Lead Co.

LIGHTERS—GAS
Milwaukee Gas Specialty Co.

MANTLES
General Gas Light Co.
Gleason, E. P., Mfg. Co.
Welsbach Co.
Welsbach St. Ltg. Co. of Amer.

METERS
Air
Connersville Blower Co.
Equitable Meter Co.
Gas Machinery Co.
Lambert Meter Co.
Pittsburgh Meter Co.
Republic Flow Meters
Superior Meter Co.

Artificial Gas
Connersville Blower Co.
Griffin & Co., John J.
Helme & McIlhenny
Lambert Meter Co.
Maryland Meter Works
Pittsburgh Meter Co.
Republic Flow Meters
Sprague Meter Co.
Superior Meter Co.

Dry
Ceveland Gas Meter Co.

Natural Gas
Cleveland Gas Meter Co.
Connersville Blower Co.
Helme & McIlhenny
Lambert Meter Co.
Maryland Meter Works
Pittsburgh Meter Co.
Republic Flow Meters
Sprague Meter Co.
Superior Meter Co.
Metric Metal Works
Equitable Meter Co.

Laboratory Test
Precision Instrument Co.

Prepayment
American Meter Co., Inc.
Cleveland Gas Meter Co.
Griffin & Co., John J.
Helme & McIlhenny
Maryland Meter Works
McDonald & Co., D.
Tufts, Nathaniel, Meter Co.
Sprague Meter Co.

Station
American Meter Co., Inc.
Builders Iron Foundry.
Connersville Blower Co.
Griffin & Co., John J.
Helme & McIlhenny
Maryland Meters Works
McDonald & Co.

Test
American Meter Co., Inc.
Lambert Meter Co.
Maryland Meter Works
Pittsburgh Meter Co.
Sprague Meter Co.
Superior Meter Co.

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Russell Engineering Co.
Stacey Bros. Gas Constr. Co.

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Connelly Iron Sponge & Gov. Co.
Gas Purifying Materials Co.
Iron Hydroxide Co.

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Cheesman-Elliot Co.

PHOTOMETERS
American Meter Co., Inc.

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Donaldson Iron Co.
U. S. Cast Iron Pipe & Fdry. Co.

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U. S. Cast Iron Pipe & Fdry. Co.

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Bartlett-Hayward Co.
Cruse-Kemper Co.
Davis & Farnum Mfg. Co.
Stacey Bros. Gas Construction Co.
Stacey Mfg. Co.

PLUGS—SERVICE AND MAIN
Soft Wood
Safety Gas Main Stopper Co.

PRODUCER GAS PLANTS
Bartlett-Hayward Co.
Gas Machinery Co.
Steere Engineering Co.
Western Gas Construction Co.

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American Meter Co., Inc.
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Helme & McIlhenny
Lambert Meter Co.
Maryland Meter Works
McDonald & Co., D.
Pittsburgh Meter Co.
Sprague Meter Co.
Superior Meter Co.

PUMPS
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Connersville Blower Co., The
Koppers Co., The

PURIFIERS
American Chem. & Mach. Co.
Bartlett-Hayward Co.
Davis & Farnum Mfg. Co.
Gas Machinery Co.
Isbell-Porter Co.
Parker-Russell Min. & Mfg. Co.
Stacey Bros. Gas Constr. Co.
Stacey Manufacturing Co., The
Steere Engineering Co.
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Connelly Iron Sponge & Gov. Co.
Gas Machinery Co.
Gas Purifying Materials Co.
Iron Hydroxide Co.

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Davis & Farnum Mfg. Co.
Gas Machinery Co.
Gas Purifying Materials Co.
Steere Engineering Co.
Western Gas Construction Co.

PYROMETERS—RECORDING
Taylor Instrument Co.

RANGES—GAS
W. M. Crane

RADIATORS
House Heating
Clow, J. B., Co.

RECORDERS—CO²
Steam Flow
Precision Instrument Co.
Republic Flow Meters

REGULATORS
Chaplin-Fulton Mfg. Co.
Equitable Meter Co.
Reynolds Gas Regulator Co.
Steere Engineering Co.

RETORTS
Horizontal and Inclined
Gardner, Jr., Co., James
Gas Machinery Co.
Gautier & Co., J. H.
Improved Equipment Co.
Isbell-Porter Co.
Missouri Fire Brick Co.
Parker-Russell Min. & Mfg. Co.
Russell Engineering Co.
Stacey Bros. Gas Constr. Co.

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Gautier & Co., J. H.
Improved Equipment Co.
Parker-Russell Min. & Mfg. Co.
Russell Engineering Co.

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Gas Machinery Co.
Isbell-Porter Co.
United Gas Improvement Co.
West Gas Imp. Co. of Amer.

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See Purifiers

SERVICE PLUG—RUBBER
Safety Gas Main Stopper Co.

STATION METERS
Connersville Blower Co.
Pittsburgh Meter Co.

STOPPERS
Gas Main
Safety Gas Main Stopper Co.

STREET DEPT. EQUIPMENT
Safety Gas Main Stopper Co.

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Welsbach Co.
Welsbach Street Lighting

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Stove Co., A. B.

TANKS
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Cruse-Kemper Co.
Davis-Farnum Co.
Stacey Bros. Gas Construction Co.
Stacey Mfg. Co., The
Steere Engineering Co.
Western Gas Construction Co.

TAR EXTRACTORS
Amer. Chemical Machinery Co.
Bartlett-Hayward Co.
Isbell-Porter Co.
Koppers Co., The
Western Gas Construction Co.

TEMPERATURE CONTROLLING DEVICE
American Gas Furnace Co.

TEMPERING AND COLORING MACHINE
American Gas Furnace Co.

TESTING APPARATUS
Electrical Testing Laboratories

THERMOMETERS
Pittsburgh Meter Co.
Precision Instrument Co.
Stupakoff Laboratories
Taylor Instrument Co.

TIPS
Gleason, E. P., Mfg. Co.

TOOLS
Nye Tool & Machine Works

TUBES—PITOT
Republic Flow Meters

TUBING
Gleason, E. P., Mfg. Co.

VALVES
Gas
Bartlett-Hayward Co.
Davis & Farnum Mfg. Co.
Gas Machinery Co.
Isbell-Porter Co.
Ludlow Valve Mfg. Co.
Stacey Bros. Gas Constr. Co.
Stacey Manufacturing Co., The
Steere Engineering Co.
Western Gas Construction Co.

Oil, Steam and Water
Ludlow Valve Mfg. Co.

Back Pressure
Chaplin-Fulton Co.
Steam

WASTE HEAT BOILERS
United Gas Improvement Co.
Western Gas Construction Co.

WATER GAS APPARATUS
Bartlett-Hayward Co.
Davis & Farnum Mfg. Co.
Gas Machinery Co.
Isbell-Porter Co.
Stacey Bros. Gas Construction Co.
Stacey Manufacturing Co., The
Steere Engineering Co.
United Gas Improvement Co.
Western Gas Construction Co.

WATER HEATERS
Hoffman Heater Co.
Ruud Mfg. Co.

The "Know How" of Experts

All our products in illumination ware are the selection of men who have studied the gas lighting business for over half a century.

E. P. GLEASON MFG. CO.
37-39 MURRAY ST. NEW YORK

A-B GAS RANGES
With Wilder-Metal Rust-Proof Oven Linings

A-B STOVE COMPANY
BATTLE CREEK, MICHIGAN

GEROULD'S IMPROVED RETORT CEMENT
The Old Reliable

A cement of great value for patching retorts, putting on mouth pieces, making up all bench-work joints, lining blast furnaces and cupolas. This cement is mixed ready for use. Economic and thorough in its work. Fully warranted to stick.

Price List, f.o.b. STAMFORD, CONN.
In Casks, 400 to 800 pounds, at 7 cents per pound
In Kegs 100 to 200 " 8 " "
In Kegs less than 100 " 10 " "

C. L. GEROULD 109 Bedford St., Stamford, Conn.

JOHN D. ORMROD, Pres. J. G. EBERLEIN, Sec'y & Treas.

Emaus Pipe Foundry — CAST IRON GAS & WATER PIPE — Donaldson Iron Co. EMAUS, PA.

Manufacturers of CAST IRON PIPE & SPECIAL CASTINGS for WATER & GAS, also FLANGE PIPE & FITTINGS for same.

We Solicit Your Inquiries for Either
SILICA or FIRE CLAY BENCHES
JAMES GARDNER JR. CO.
Ebensburg, Cambria County, Pa.

Industrial Managers

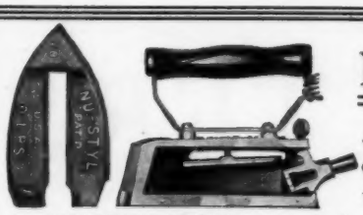
Tell every prospect for core ovens—tempering ovens—annealing ovens—enameling ovens—japanning ovens—drying ovens—lacquering ovens—lithographing ovens about

Maehler Gas Ovens

The Paul Maehler Company 2210 W. Lake St., Chicago, Ill.

For Meters, Boosters Blowers and Exhausters
Consult
CONNERSVILLE BLOWER CO.
CONNERSVILLE, IND.

DAVIS & FARNUM MFG. CO.
WALTHAM, MASS.
GAS HOLDERS—OIL TANKS
COAL AND WATER GAS EQUIPMENT
CAST IRON FITTINGS AND SPECIALS
MACHINE CASTINGS



Nu-Styl Domestic Gas Irons for 1922 Season

A type to meet each particular gas and demand situation, priced according to equipment. CHOICE OF MIXERS; automatic, improved-injector, or needle-valve.

All NU-STYL IRONS are odorless, have everlasting flame-screens in burner-heads, also our exclusive shock-absorbing spring-handles, also our 2 lb. slip-on weight increaser (our 2 in 1 feature). Our special asbestos-non-heat absorbing stand is built for WORK and prevents the iron from falling off the stand. Write us for prices.

BENSON MANUFACTURING CO., 115 N. Desplaines Street, Chicago

THE Needham System has practically and commercially solved the problem of high pressure gas as an industrial fuel. Our catalogue has full details. Write for it today.

THE NEEDHAM GAS APPLIANCE COMPANY, Inc.
41 BROOK AVE. PASSAIC, N. J

Cox Computers Save Time and Worry
For low pressures—$2.50 For high pressures—$5.00
ORDERS FILLED IMMEDIATELY
AMERICAN GAS JOURNAL 53 Park Place, N. Y.

The opportunities for increased output by means of Welsbach Gas Street Lamps are many, and with hard and intelligent work and our cooperation this additional business may be secured.

The Dependable Line

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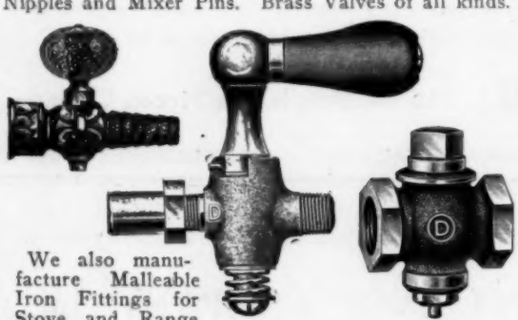
We make a full line of Gas Hose Cocks and Gas Service Cocks—all sizes and styles. Gas Mixers—Hose Nipples and Mixer Pins. Brass Valves of all kinds.



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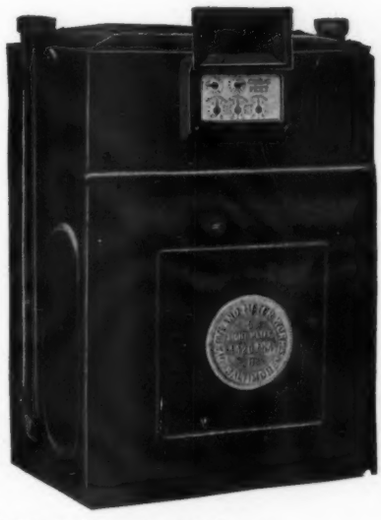

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The "A" meter was born of these conditions, and has satisfactorily met them for the past twenty years.

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